LIBRARY OF PRINCETON
OCT 1 1948
THEOLOGICAL SEMINARY

E98
.C9K93

# CULTURAL AND NATURAL AREAS OF NATIVE NORTH AMERICA

LIBRARY OF PRINCETON
OCT 1 1948
THEOLOGICAL SEMINARY

# CULTURAL AND NATURAL AREAS OF NATIVE NORTH AMERICA

BY

A. L. KROEBER

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1947

University of California Publications in American Archaeology
and Ethnology

Editors: A. L. Kroeber, R. H. Lowie, R. L. Olson

Volume 38, pp. xii + 1–242, 28 maps
Transmitted October 9, 1936
Issued December 12, 1939
Reprinted, 1947

University of California Press
Berkeley and Los Angeles
California

---

Cambridge University Press
London, England

PRINTED BY OFFSET IN THE UNITED STATES OF AMERICA

# PREFACE

ALTHOUGH the manuscript of this work was completed in 1931, publication was delayed by the depression, both at the University of California and at the Bureau of American Ethnology, which latter, generously, for a time hoped to be able to print it. The years that have elapsed have brought substantial additions to knowledge, and references to the more important of them will be found in footnotes and special supplementary passages inserted in 1936 and (a few of them) in 1939. The main body of the text stands as written in 1931. Alterations that might have been made in parts of several maps have not been undertaken, on account of cost; but the newer data, if deviant, have been cited.

A. L. K.

Berkeley, California,
May, 1939.

# CONTENTS

SECTION PAGE

I. Objectives........ 1

II. History of concepts........ 3
  Environment in anthropology........ 3
  Culture areas, climaxes, and boundaries........ 4
  Relation of natural to cultural areas........ 6

III. Tribal areas........ 8
  List of works used for the tribal map (map 1)........ 9
  List of works appearing since preparation of the tribal map........ 11
  Tribal synonyms........ 11
  Pronunciation of tribal names........ 12

IV. Vegetation areas........ 13
  Authorities used for the vegetation maps (maps 2–5)........ 14
  Concordance areas........ 15

V. Culture areas: Arctic Coast........ 20
  Sources of Eskimo culture........ 20
  Ecological phases........ 22
  Cultural classification and history........ 24
  Summary........ 27

VI. Culture areas: Northwest Coast........ 28

VII. Culture areas: Southwest........ 32
    1– 2. Pueblo subculture type........ 34
    3–10. Sonora-Gila-Yuma subculture type........ 38
  History........ 45

VIII. Culture areas: Intermediate and Intermountain areas........ 49
    1. Great Basin........ 49
    2. California........ 53
    3. Columbia-Fraser Plateau........ 55

IX. Culture areas: East and North........ 60
  Eastern areas........ 60
    1. Southeast........ 61
        Muskogian and Creek........ 64
    2. South Florida........ 67
    3. South Texas: Northwest Gulf Coast........ 70
    4. Red River area........ 74
    5. Plains areas........ 76
        Southern Plains........ 79
        Northern Plains........ 80
    6. Prairie areas........ 84
    Summary of tribal history in the plains-prairies........ 86
    7. Wisconsin or Wild Rice area........ 88
    8. Ohio Valley........ 89
    9. Lower Great Lakes........ 91
    10–12. Atlantic Coast areas........ 92
    13. Appalachian Summit........ 95
  Northern areas........ 95
    14. Northern Great Lakes........ 96
    15. Eastern Subarctic........ 97
    16. Western Subarctic........ 98
  Relations of Eastern and Northern areas........ 101
  Eastern archaeological areas........ 101

SECTION PAGE

X. Culture areas: Mexico and Central America........ 109
  Isthmus........ 109
    1. Atlantic Nicaragua-Honduras........ 110
    2. Pacific Nicaragua........ 110
    3. Salvador........ 110
    4. Upland Guatemala........ 110
    5. Yucatán Peninsula........ 111
    Relations of Maya upland and lowland........ 111
    6. Oaxaca-Tehuantepec........ 115
    7. Guerrero........ 116
    8. Vera Cruz........ 116
    9. Southeastern Central Mesa........ 116
    10. Michoacán........ 117
    11, 12. Jalisco Highland and Jalisco Coast........ 117
    13. Northeastern Central Mesa: Guanajuato-Querétaro........ 119
  North Mexican areas........ 119
      Documentary sources........ 119
      Archaeology........ 122
      Language........ 124
      Areas........ 125
    14. South Sinaloa: Aztatlán-Culiacán........ 126
    15. Sierra del Nayarit: Southern Sierra Madre........ 127
    16. Central Sierra Madre........ 128
    17. North Mexican Interior Plateau........ 128
    18. Tamaulipas: Northwest Gulf Coast........ 130

XI. Population........ 131
  Discussion of Mooney's figures........ 132
  Population and density by tribes........ 134
  Population and density by areas........ 141
  Coast land and farm land........ 143
  The agricultural East........ 146
    Comparison with Mexico........ 150
  The Southwest........ 151
  California........ 153
  The Northwest Coast........ 155
  Eskimo........ 156
  Mexico and Central America........ 157
  The hemisphere........ 164
  Shore-line population density........ 166
  Population size of language groups........ 172
  Appendix: later data........ 177

XII. Physiographic areas........ 182
  United States........ 182
    A. Laurentian Highland (Pre-Cambrian Shield)........ 182
    B. Atlantic Coast Plain........ 183
    C. Appalachian Highlands........ 183
    D. Interior Plains........ 185
    E. Interior Highlands........ 187
    F. Rocky Mountain System........ 187
    G. Intermontane Plateaus........ 188
    H. Pacific Mountain System........ 191

SECTION PAGE
XII. Physiographic areas (*Continued*)
  Canada 193
    A. Canadian or Pre-Cambrian Shield 194
    B. Atlantic Coast Plain 194
    C. Appalachian Highlands 194
    D. Interior Plains 195
    E. Interior Highlands 195
    F. Rocky Mountain System 195
    G. Intermontane Plateaus 196
    H. Pacific Mountain System 196
  Mexico 197
  Physiography and culture 201

XIII. Relations of environmental and cultural factors 205
  Physiography 206
  Natural vegetation 206
  Climate 207
  Water 213
  Drainage 215

XIV. Agriculture 218

XV. Cultural intensity and climax 222

Index 229

## TABLES

1. Concordance key of vegetation areas 15
2. Regional variants of Eskimo economic culture 23
3. Florida vegetation types 70
4. Algonkin dialect groups and culture areas 98
5. Holmes and Wissler archaeological areas 107
6. Classification of the Mayan languages 114
7. Tribal populations, territorial extent, and densities north of Mexico 134
8. Population densities of principal areas of culture 142
9. Population densities by major areas 143
10. Grand population divisions 144
11. Mexico-Central America: areas, population, densities 158
12. Estimated increase of population in Mexico 163
13. Population of the Americas, 1650 A.D. 165
14. Population of the Western Hemisphere, 1500 A.D. 166
15. Shore line and population 170
16. Population by linguistic stocks 174
17. Principal correspondences of physiographic provinces with cultural and ethnic areas 202
18. Summary list of North American culture areas *in pocket*

## MAPS

PAGE
1a. Native tribes of North America . . . *in pocket*
1b. Native tribes of North America (key for use with other maps) . . . *in pocket*
2. Vegetation areas (Harshberger) . . . *in pocket*
3. Vegetation areas (Shelford) . . . *in pocket*
4. Vegetation areas (Shantz-Zon, Lynch) . . . *in pocket*
5. Vegetation areas (Shreve, Malte, Kellogg, Sanders) . . . *in pocket*
6. Native cultural areas of North America . . . *in pocket*
7. Physiographic areas of North America . . . *in pocket*
8. Creosote bush and sagebrush . . . 34
9. Open and wooded country in the United States . . . 58
10. Culture areas of Mason and Wissler compared . . . 61
11. Muskogian dialect groups . . . 66
12. Range of southeastern deciduous tree species . . . 68
13. Precipitation-evaporation ratio in the United States . . . 72
14. Evergreen broad-leaved and microphyllous trees in the United States . . . 73
15. Mound areas of the eastern United States . . . 102
16. Pottery types of the eastern United States . . . 104
17. Subsistence, ethnic, and political groups of native Mexico . . . 121
18. Native population densities by cultural areas . . . *facing* 134
19. Population densities in native California . . . 154
20. Density of rural population in modern Mexico . . . 162
21. Coast population densities in the native period . . . 168
22. Natural regions of Mexico (McBride) . . . 198
23. Natural regions of Mexico (Sanders) . . . 199
24. Dry climates of the United States . . . 208
25. Seasonal distribution of precipitation in the western United States . . . 209
26. Dates of killing frosts in the Southwest . . . 210
27. Growing seasons in the United States—120-day and 100-day . . . 212
28. Intensities or "levels" of native cultures by areas . . . *facing* 222

## BIBLIOGRAPHICAL ABBREVIATIONS USED

| | |
|---|---|
| AA | American Anthropologist |
| AAA–M | American Anthropological Association—Memoirs |
| AMNH–AP | American Museum of Natural History—Anthropological Papers |
| AMNH–B | American Museum of Natural History—Bulletins |
| AMNH–H | American Museum of Natural History—Handbook |
| BAAS | British Association for the Advancement of Science |
| BAE–B | Bureau of American Ethnology—Bulletins |
| BAE–R | Bureau of American Ethnology—(Annual) Reports |
| CED | Culture Element Distributions, a series of monographs begun in UC-PAAE and now continued in UC-AR |
| CNAE | Contributions to North American Ethnology |
| ICA | International Congress of Americanists (Comptes rendus, Proceedings) |
| JAFL | Journal of American Folk-Lore |
| JRAI | Journal of the Royal Anthropological Institute |
| MAIHF–C | Museum of the American Indian, Heye Foundation—Contributions |
| MAIHF–IN | Museum of the American Indian, Heye Foundation—Indian Notes |
| PM–P | Peabody Museum (of Harvard University)—Papers |
| SI–AR | Smithsonian Institution—Annual Reports |
| SI–MC | Smithsonian Institution—Miscellaneous Collections |
| UC–AR | University of California—Anthropological Records |
| UC–IA | University of California—Ibero-Americana |
| UC–PAAE | University of California—Publications in American Archaeology and Ethnology |
| UC–PG | University of California—Publications in Geography |
| USNM–R | United States National Museum—Reports |
| UW–PA | University of Washington—Publications in Anthropology |
| YU–PA | Yale University—Publications in Anthropology |
| ZE | Zeitschrift für Ethnologie |

# CULTURAL AND NATURAL AREAS OF NATIVE NORTH AMERICA

BY

A. L. KROEBER

## I. OBJECTIVES

THIS STUDY has two objectives. It aims, first, to review the environmental relations of the native cultures of North America. Its second purpose is to examine the historic relations of the culture areas, or geographical units of cultures.

Three points are best stated explicitly at the outset, to prevent possible misconception.

The first is that the present work in no sense represents a relapse toward the old environmentalism which believed it could find the causes of culture in environment. While it is true that cultures are rooted in nature, and can therefore never be completely understood except with reference to that piece of nature in which they occur, they are no more produced by that nature than a plant is produced or caused by the soil in which it is rooted. The immediate causes of cultural phenomena are other cultural phenomena. At any rate, no anthropologist can assume anything else as his specific working basis. But this does not prevent the recognition of relations between nature and culture, nor the importance of these relations to the full understanding of culture.

The second point is to guard against the possible misconception that the determination of culture areas is here considered an end in itself. The concept of a culture area is a means to an end. The end may be the understanding of culture processes as such, or of the historic events of culture.

The study of processes tends to be analytic, and therefore to disregard time and space relations except so far as they condition the particular phenomena whose processes are being examined. In proportion as the study advances and learns to deal more directly with cultural processes as such, the time and space relations become a sort of frame. They remain factors that for scientific purposes must be controlled, but this control becomes a limitation, almost an encumbrance. This type of study is akin to the dissecting technique of the laboratory, even though cultural anthropology has neither laboratory nor experiment. It is the method which has been carried farthest, in penetration and exactness, by Franz Boas. This method can use culture areas only to a limited extent, as a sort of preliminary; and its practitioners therefore esteem the concept as of only incidental utility.

On the contrary, the historic approach, remaining concerned with events as they occur in nature, always stresses the time aspects of phenomena as part of its ultimate objective. Ethnology, particularly when concerned with peoples which, like the native ones of America, have left few or no documentary records, perforce has recourse to spatial classifications such as culture areas. In themselves these yield only a momentary and static organization of knowledge, whereas the purpose of history is genetic. In proportion as the recognition of culture areas becomes an end in itself, it therefore defeats really historic understanding. The conception on which the present monograph is based is that space and time factors are sufficiently interrelated in culture history to make the culture area a valuable mechanism, rather than a distraction, in the penetration of the time perspective of the growth of cultures so relatively undocumented as are those of native America.

The third point to be kept in mind is that the present study deals with culture wholes, and not, except incidentally, with culture elements or "traits," nor with those associations of elements which are sometimes called "culture complexes" but which always constitute only a fraction of the entirety of any one culture. Culture wholes as a concept correspond in many ways to regional floras and faunas, which are accumulations of species but can also be viewed as summation entities.

The term "culture area" is employed because usage has established it. It is an unfortunate designation in that it puts emphasis on the area, whereas it is usually the cultural content that is being primarily considered. We mean a regionally individualized type or specific growth of culture when we say "culture area," much as a historian may use "the Eighteenth Century" as a short way of referring to the culture that was characteristic of eighteenth-century Europe. It would be well if there were a brief technical term for the naturally individualized growths of culture with which historical anthropology is more and more dealing. But it seems impossible to find an unambiguous term without coining it.[1] Evidently the general thought of our day is not yet sufficiently concerned with such growths of culture to feel the need of a designation for them.

---

[1] "Diaita" (Angl. diaeta) has been suggested to me by J. L. Myres as an etymologically adequate term to denote a culture whole or actually cohering culture mass, corresponding to the "biota" of biologists. It would be useful if adopted.

# II. HISTORY OF CONCEPTS

## ENVIRONMENT IN ANTHROPOLOGY

FOR A GENERATION American anthropologists have given less and less attention to environmental factors. In part this represents a healthy reaction against the older naïve view that culture could be "explained" or derived from the environment. For the rest, it is the result of a sharpening of specific anthropological method and the consequent clearer perception of culture forms, patterns, and processes as such: the recognition of the importance of diffusion, for instance, and of the nature of the association of culture elements into "complexes." Most attention came to be paid, accordingly, to those parts of culture which readily show self-sufficient forms: ceremonial, social organization, art, mythology; somewhat less to technology and material culture; still less to economics and politics, and problems of subsistence. Much of the anthropology practiced in this country in the present century has been virtually a sociology of native American culture; strictly historic and geographic interests have receded into the background, except where archaeological preoccupation kept them alive. We have had intensive studies of the internal social grouping of peoples of whom we did not know whether they constituted one or several national units; analyses of the patterns of maize- or acorn-utilization complexes, rather than consideration of whether such a complex provided a tenth, a half, or four-fifths of the subsistence of the various tribes who adhered to it; and so on. This diversion of attention to cultural forms was necessary and desirable; the attendant shift of interest away from historical and subsistence problems was probably inevitable. There is also often a readier productivity in work along the formal lines, especially among Indians on reservations. An old informant can sometimes give exact data on the sequence of details of a ritual that has been abandoned for forty years, but is vague about the proportion of acorns or salmon in his father's diet, or the months of each year spent by his group on the river or in the mountains. However, such facts are also of consequence in their relation to culture, since every culture is conditioned by its subsistence basis. The culminations of culture obviously rest on a certain degree of economic surplus, for instance. Such a surplus will not explain why the lines in a given art are curved instead of straight, or why a people derives the origin of mankind from below ground rather than from the sky. But it may help to explain why Haida art is esthetically richer than Kwakiutl, or Pueblo ritual more complex than Havasupai. And these are also legitimate problems; and strictly historical ones. We need not edge away from them because they involve qualitative judgments or a concern with culture wholes. Anthropology does not have to be exclusively analytic in order to be valid.

## Culture Areas, Climaxes, and Boundaries

The concept of the culture area has had a gradual, empirical, almost unconscious growth. It probably began, as Boas points out, with the classification of museum collections on natural geographical lines instead of evolutionistically schematic ones. By 1916, Sapir in his Time Perspective discussed culture areas as something in general use; in 1917, Wissler codified those of native America,—on the basis, largely, of current usage. There have been no serious modifications or criticisms of his scheme. But it is significant that Wissler does not develop his interpretation of the growth of American culture through use of the culture areas which he defines. He follows agriculture, the textile arts, architecture, and so on, one by one through the two continents; and it is the summation of these findings, essentially, that yields his picture of hemispheric history. The culture-area classification remains a nearly static one, and apart.

There has been another method of geographical attack: consideration of the distribution of single culture elements or limited complexes. This is the method pursued with such eminent success by Nordenskiöld in South America. Nothing equally systematic has been attempted for North America. But on a more limited scale the method has been applied by the Danes to Eskimo culture, by Spier to the Havasupai and their neighbors, and by several students to mythological material, although these latter have applied it without primarily historical objective. Wissler has used the method abundantly in somewhat different form: for larger complexes, or for summary outlines, or in elaboration of the age-and-area principle. This method is analytic in the sense that it deals with detached parts of culture. But cultures occur in nature as wholes; and these wholes can never be entirely formulated through consideration of their elements. The culture-area concept does attempt to deal with such culture wholes.

Boas has attempted to limit the significance of culture areas by asserting that these areas do not coincide when they are formulated on the basis of different parts of culture: technology, social organization, ritual, art, music, myth, etc. This view must be doubted as contrary to the overwhelming run of the facts, though no doubt occasionally true. An unusually rich development in almost all these lines is normally found coincident in highly specialized and distinctive cultures, such as those of the Pueblos or North Pacific Coast Indians.[1] Navaho altar paintings may be the most developed in the Southwest, but Navaho culture is after all close to that of the Pueblos and in many ways obviously dependent on it. That at some points the pupil departs from the master or surpasses him does not invalidate the reality of a school or tradition. In general, the experience of Old World history is to the same effect.

As a matter of fact, the points in time and space at which historically known culture growths culminated usually show a virtual coincidence of florescence in the several facets of culture: the peaks of empire, wealth, sculpture, drama, philosophy, science in fifth-century Athens, for instance. Augustan Rome is another classical example; so is sixteenth-century Spain. Among other scholars, Flinders Petrie has gone so far as to try to demonstrate a fixed order in which the respective peaks of each of these facets of culture are reached in any civilizational culmination.[2] This attempt must be regarded as somewhat forced into a scheme. But it does show clearly the correlation of the parts, their close relation or overlapping coincidence in time and space, whenever the culmination is strong. There is no reason to believe that the course of events was materially different in native America. For the Maya and Pueblos we have archaeological justification that it was similar.

---

[1] Negative developments in relatively rich cultures are an apparent exception which really confirms the situation depicted, because absences tend to be due to strong positive developments in allied directions: the shaman is lacking in Pueblo life because the priesthood is strong, Lower Colorado tribes use a minimum of ritual paraphernalia because of their extreme emphasis on dream experience, and so on.

The whole subject of cultural climax is evidently related to that of the culture area. Since ethnologists normally deal with relatively timeless data they have been cautious and slow to approach problems of time climax. They have, however, evolved a spatial substitute: the culture center, or district of greatest cultural productivity and richness. This obviously is the regional expression of a culmination whose temporal manifestation is the climax. As so often, Wissler has pioneered the way. He makes the point that the center is the integral thing about an area. The area may therefore be conceived and represented somewhat diagrammatically. Hence the straight lines and sharp angles on Wissler's culture-classification maps. No serious exception could be taken to these maps if the centers were decisively defined; but Wissler more often than not leaves them as indefinite as the areas. His Plains group comprises thirty-one tribes, of which eleven are the most typical; his Southeast centers among the Muskogians, Yuchi, and Cherokee, who occupied half of the total region. For the Mackenzie and Eastern Woodland areas, the localization of centers is attempted very half-heartedly. Wissler also makes but little more use of his culture centers than of his culture areas when he reconstructs the outline history of the hemisphere. In short, it is clear that he has perceived the significance of focal points of growth, resulting in culminations definable in spatial and presumably temporal terms; but his working out of these has remained summary and indefinite.

The weakest feature of any mapping of culture wholes is also the most conspicuous: the boundaries.[3] Where the influences from two culture climaxes or foci meet in equal strength is where a line must be drawn, if boundaries are to be indicated at all. Yet it is just there that differences often are slight. Two peoples classed as in separate areas yet adjoining each other along the interarea boundary almost inevitably have much in common. It is probable that they normally have more traits in common with each other than with the peoples at the focal points of their respective areas. This is almost certain to be so where the distance from the foci is great and the boundary is not accentuated by any strong physical barrier or abrupt natural change. But the same holds true of the faunal and floral areas used by naturalists. In short, what boundaries really show is not so much clefts occurring in nature, as relative extent and strength of influences emanating from foci. They represent something comparable to political spheres of influence expressed by devices suitable for showing artificial political entities. It would be desirable, therefore, to construct cultural maps without boundary lines, on some system of shading or tint variation of color; but the mechanical difficulties are great. For the present, it seems necessary to use the old devices and leave it to the reader to translate what his eye sees into the dynamic aspects that are intended. This difficulty inheres in all attempts to express in static two-dimensional space terms, phenomena that have a sequential as well as a spatial aspect; a flow as well as a distribution.

---

[2] Discussed further in the final section of the present work.

[3] This is less true of complexes or associations than of wholes, and is not at all applicable to atomic culture elements which can be mapped in terms of presence or absence.

## Relation of Natural to Cultural Areas

We can accept Wissler's findings on the relation of culture areas to environment.[4] He concludes that environment does not produce a culture, but stabilizes it. Because at many points the culture must be adapted to the environment, the latter tends to hold it fast. Cultures therefore incline to change slowly once they have fitted themselves to a setting, and to enter a new environment with more difficulty than to spread over the whole of the natural area in which their form was worked out. If they do enter a new type of territory, they are subject to change. Once fitted to an environment, they are likely to alter radically only through some factor profoundly affecting subsistence, such as the introduction of agriculture.

Beyond these sound general principles, however, Wissler does not go very far. In his American Indian he enumerates some suggestive rough correspondences between altitude contours and linguistic or culture groups.[5] His later work, The Relation of Nature to Man in Aboriginal North America (1926), is concerned with the spatial distribution of culture traits and complexes. Nature in the sense of the varying physical and organic environment does not really enter into the argument, except in the last section of the last chapter, which points out, with a few examples, that ecological factors may be of importance, but does not pursue the subject to any intensive conclusions.

Wissler's ten North American culture areas really rest on the six "food" areas which he reviews at the beginning of his book on the American Indian, although the relation of the two classifications is not wholly exact and does not become very explicit. These subsistence areas seem to refer primarily to the basis of culture, but of course involve environment also, especially its ecological aspects.

Some years before, Otis T. Mason had dealt directly though summarily with the environment of cultures, in the Handbook of American Indians. His twelve "ethnic environments" are defined in both geographical and cultural terms; and the environments are largely faunal and floral, that is, ecological. This stimulating essay has attracted little attention, in spite of its obvious soundness of classification.[6] Mason's areas partly coincide with Wissler's, as the following comparison shows:

---

[4] The American Indian (1922 ed.), 372–374.

[5] The same, 368–369.

| WISSLER<br>*Food areas* | WISSLER<br>*Culture areas* | MASON<br>*Ethnic environments* |
|---|---|---|
| Caribou | Eskimo | Arctic |
| | Mackenzie | Yukon-Mackenzie |
| | (Northern part of Eastern Woodland) | St. Lawrence-Lakes |
| Bison | Plains | Plains |
| Salmon | North Pacific Coast | North Pacific Coast |
| | Plateau | Columbia-Fraser* |
| Wild Seeds | California | Interior Basin<br>California-Oregon |
| Eastern Maize | Eastern Woodland (southern part) | Atlantic Slope<br>Mississippi Valley† |
| | Southeastern | Gulf Coast |
| Intensive Agriculture | Southwestern | Pueblo |
| | "Nahua" | (Not dealt with) |

* Assigned to Wild Seed food area, largely to Plains culture area, by Wissler.
† Divided by Wissler between the Plains and Eastern Woodland culture areas.

Ratzel concludes the second volume of his Anthropogeographie with a world map in which native North America is divided into four areas[7] corresponding rather closely to the primary culture areas laid down in the present work. They are, however, only briefly discussed.[8] Ratzel clearly knew much ethnography, had thought about it, and possessed definite ethnographical insight. But in the modern view his work is deficient in not sufficiently separating population and culture. Somatological, populational, and cultural aspects are only partly differentiated by him. Hence he evolved a clear concept of marginal peoples without advancing to that of marginal cultures, which Sophus Müller grasped concretely in dealing with the prehistory of Europe some years later. Ratzel, in short, remained primarily a geographer. But he did conceive of culture as more than an incidental epiphenomenon, and was far from being the crass environmentalist which Semple's misrepresentatively selective adaptation makes him out to be.

Environmental factors have not been wholly neglected in monographic studies in the North American field; but treatments have either been introductory, or, like Jenks's Wild Rice Gatherers, concerned with special manifestations. There seem to be no general classifications besides those reviewed.

---

[6] In an earlier work, Influence of Environment upon Human Industries or Arts, SI-AR 1895:639–665, 1896, Mason recognizes eighteen "environments" or "culture areas" as he indiscriminately calls them (pp. 646, 651), in the western hemisphere: Arctic (Eskimo); Athapascan (Yukon-Mackenzie); Algonquin-Iroquois; Muskhogean; Plains of the Great West; North Pacific Coast; Columbia Drainage; Interior Basin; California-Oregon; Pueblo; Middle American; Antillean (including southern Florida and part of the northern coast of South America); South American Cordilleran (Colombia to Peru); Andean Atlantic Slope (Colombia to Bolivia); Eastern Brazilian (from Tocantins east); Central Brazilian (Matto Grosso, between Araguaya and the western boundary of Brazil); Argentinian-Patagonian; Fuegian.

[7] Hyperborean, Northwestern, Northeastern, Civilized Peoples of Middle America.

[8] Anthropogeographie, 2:775–779, 1891.

## III. TRIBAL AREAS

Nearly fifty years ago, Powell published his classification and map of Indian linguistic families north of Mexico, and this has been reissued with minor corrections by the Bureau of American Ethnology. Thomas and Swanton followed with a similar map of Mexico and Central America. So far as major speech groups are concerned, the continent has accordingly long been plotted with considerable accuracy. Not so, a tribal map. There have been many sectional ones; but the first continental one was that of Wissler in 1917. This, however, gave no boundaries, and the apparent area attributed to any group was sometimes a function of the number of letters in its name rather than of its actual geographical holdings. The latter difficulty was partly remedied in a small map, based mainly on Wissler's, issued in 1919 by the University of California, in which a number near the center of each tribal range corresponded to the name as given in a key list. There were also added some tribes not included by Wissler. However, no boundaries of tribal areas were shown, and the tribes represented were only those most frequently cited in recent ethnological literature.[1]

Evidently, maps as loosely defined as these offer little opportunity for exact comparison of tribal and cultural areas with environmental ones. The only recourse was to compile a tribal boundary map; which herewith appears as map 1. It makes no pretense of original research or of finality. It has involved many judgments between differing delimitations. It follows at every point some one of the authorities listed, except where irreconcilable conflicts have had to be more or less arbitrarily compromised, and weight has then been given to natural features; for instance, watersheds rather than streams have generally been postulated as boundaries whenever a departure from the sources was forced.[2]

The map does not, as it should in principle, represent conditions at one absolute date nor even at one relatively consistent historic moment, such as that of discovery. It attempts to indicate tribal territories approximately as they were constituted at the time of first occupation by Europeans. This time varied from the early sixteenth to the early nineteenth century in North America. It is this variation as well as conflict of authority that has forced the compromises mentioned. A map dated for the period of discovery would be incomplete in many areas, or filled with doubtfully identifiable names. Besides, this plan would be subject to much the same variability of time represented as the plan actually followed. Most of the maps used as sources because they show boundaries refer to the period of occupation rather than to that of discovery. The situation is not wholly fortunate; but the method followed seems the most feasible and useful.

---

[1] The Department of Anthropology of Yale University has recently (in 1938 ?) prepared and manifolded, apparently in connection with its "cross-cultural" program, a tribal map showing boundaries as well as names. This, then, is the first map of the kind to be issued. The size is adequate—16 inches high; drainage is not shown; nor the areas south of Tehuantepec.

[2] The territorial relations of the Bannock and Shoshone, in which Mooney has mainly been followed, are almost certainly wrong. The Lemhi are Shoshone, not Bannock in speech. I suspect either that the "Shoshone" and Wind River Shoshone held a fringe of territory along the Rockies and Bitterroots which included the Lemhi; or that the Bannock had all the upper Snake, virtually cutting the Lemhi off from the "Shoshone" and the "Shoshone" from the Western Shoshone, the "Shoshone" and Wind River Shoshone being one people. In addition to other inconsistencies, the relation of the ethnic distribution on the map to the drainage seems unlikely to be true; but I do not know how to make correction.

This and related problems are clearing up, owing to recent field studies by Steward and others. See the supplemental bibliography in this section (p. 11).

Below are given the sources used in the preparation of the map, a list of some of the more important synonyms not appearing on the map, and memoranda on pronunciation. Tribal names abbreviated on the map appear in full in its margin.

## LIST OF WORKS USED FOR THE TRIBAL MAP (MAP 1)

Beauchamp, W. M.
1900. Aboriginal Occupation of New York. Bull. N. Y. State Mus., no. 32.
Boas, Franz
1888. The Central Eskimo. BAE–R 6.
1889, 1890. Fifth and Sixth Reports of the Committee . . . [on] the North-Western Tribes of . . . Canada. BAAS.
Boas, Franz, and Haeberlin, Herman
1927. Sound Shifts in Salishan Dialects. Internat. Jour. American Linguistics, 4:117–136.
Boas, Franz, ed.: (Haeberlin, Teit, Roberts)
1928. Coiled Basketry in British Columbia and Surrounding Region. BAE–R 41:119–484. (Same map as preceding, colored.)
Boyle, David, ed.
1906. Annual Archaeological Report [for Ontario], 1905. Toronto. (Boas, Chamberlain, Hill-Tout, Morice, and others.)
Cadzow, D. A.
1925. Habitat of Loucheux Bands. MAIHF–IN 2:172–177.
Cooper, J. M.
1928. Northern Algonkian Scrying and Scapulimancy. P. W. Schmidt Festschrift, 205–217.
Dall, Wm. H.
1877. Tribes of the Extreme Northwest. CNAE 1.
Dorsey, J. O.
1890. Gentile System of the Siletz Tribes. JAFL 3:227–237.
Gibbs, George
1877. Tribes of Western Washington and Northwestern Oregon. CNAE 1.
Hill-Tout, C.
1907. Report on the Ethnography of the South-Eastern Tribes of Vancouver Island. JRAI 37:306–374.
Hodge, F. W., ed.
1907–1910. Handbook of American Indians. BAE–B 30 (pts. 1 and 2).
Hrdlička, Aleš
1903. The Region of the Ancient Chichimecs. AA 5:385–440.
1904. Notes on the Indians of Sonora. AA 6:51–89.
Jenks, A. E.
1900. The Wild Rice Gatherers of the Upper Lakes. BAE–R 19 (pt. 2).
Kidder, A. V.
1924. An Introduction to the Study of Southwestern Archaeology. New Haven.
Kroeber, A. L.
1907. Shoshonean Dialects of California. UC–PAAE 4:65–166.
1925. Handbook of the Indians of California. BAE–B 78.

LEHMANN, WALTER
1920. Zentral-Amerika. I. Teil: Die Sprachen. Berlin. (North American part of map also in Seler, Gesammelte Abhandlungen, 4, Berlin, 1923.)
MATHIASSEN, THERKEL
1927. Archaeology of the Central Eskimos. Copenhagen.
MICHELSON, TRUMAN
1912. Preliminary Report on the Linguistic Classification of Algonquian Tribes. BAE–R 28.
MOONEY, JAMES
1894. Siouan Tribes of the East. BAE–B 22.
1896. The Ghost Dance Religion. BAE–R 14 (pt. 2).
1898. Calendar History of the Kiowa Indians. BAE–R 17.
1900. Myths of the Cherokee. BAE–R 19 (pt. 1).
1907. The Cheyenne Indians. AAA–M 1 (pt. 6).
MURDOCH, JOHN
1892. Ethnological Results of the Point Barrow Expedition. BAE–R 9.
NELSON, E. W.
1899. The Eskimo about Bering Strait. BAE–R 18.
NEWCOMBE, C. F.
1909. Guide to Anthropological Collection in the Provincial Museum. Victoria. (Map reproduced in reduction and without colors in P. E. Goddard, Indians of the Northwest Coast, AMNH–H, Ser. 10, 1924.)
OROZCO Y BERRA, M.
1864. Geografía de las Lenguas y Carta Etnográfica de México. Mexico.
POWELL, J. W.
1891. Indian Linguistic Families North of Mexico. BAE–R 7.
ROYCE, C. C.
1899. Indian Land Cessions in the United States. BAE–R 18.
SAPPER, CARL
1897. Das nördliche Mittel-Amerika. Braunschweig.
1902. Mittelamerikanische Reisen und Studien. Braunschweig.
SPECK, F. G.
1924. The Ethnic Position of the Southeastern Algonkian. AA 26:184–200.
SPIER, LESLIE
1927. Tribal Distribution in Southwestern Oregon. Oreg. Hist. Quart., vol. 28.
STEENSBY, H. P.
1917. An Anthropogeographical Study of the Origin of Eskimo Culture. Meddelelser om Grönland, vol. 53.
STOLL, OTTO
1884. Zur Ethnographie der Republik Guatemala. Zürich.
SWANTON, J. R.
1904. The Development of the Clan System and of Secret Societies among the Northwestern Tribes. AA 6:477–485.
1911. Indian Tribes of the Lower Mississippi Valley. BAE–B 43.
1922. Early History of the Creek Indians and their Neighbors. BAE–B 73.
TEIT, JAMES
1906. Notes on the Tahltan Indians. Boas Anniversary Volume, 337–349.
1928. The Middle Columbia Salish. UW–PA 2:83–128.
THOMAS, CYRUS, and SWANTON, J. R.
1911. Indian Languages of Mexico and Central America. BAE–B 44.
TURNER, L. M.
1894. Ethnology of the Ungava District. BAE–R 11.
WINCHELL, N. H.
1911. The Aborigines of Minnesota. Minn. Hist. Soc.

## LIST OF WORKS APPEARING SINCE PREPARATION OF THE TRIBAL MAP

Berreman, J. V.
1937. Tribal Distribution in Oregon. AAA–M 47.
Kelly, Isabel T.
1934. Southern Paiute Bands. AA 36:548–560.
Osgood, C.
1934. Kutchin Tribal Distribution and Synonymy. AA 36:168–179.
1936. Contributions to the Ethnography of the Kutchin. YU–PA no. 14.
1936. The Distribution of the Northern Athapaskan Indians. YU–PA no. 7.
Ray, Verne F.
1936. Native Villages and Groupings of the Columbia Basin. Pacific Northwest Quart., vol. 27, no. 2.
Ray, Park, and others
1938. Tribal Distribution in Eastern Oregon; and: Tribal Distribution in the Great Basin. AA 40:384–415, 622–638. (V. F. Ray on Northeastern Oregon, 384–395; G. P. Murdock, Tenino, Molala, Oregon Paiute, 395–402; B. Blyth, Oregon Paiute, 402–405; O. C. Stewart, Northern Paiute, 405–407; J. Harris, Western Shoshoni, 407–410; E. A. Hoebel, Eastern Shoshoni, 410–413; D. B. Shimkin, Wind River, 413–415; W. Z. Park, Paviotso, 622–626; E. E. Siskin, Washo, 626–627; A. M. Cooke, Northern Ute, 627–630; W. T. Mulloy, Central and Southern Nevada, 630–632; M. K. Opler, Southern Ute, 632–633; I. T. Kelly, Southern Paiute, 633–634; M. L. Zigmond, Kawaiisu, 634–638.)
Sauer, C.
1934. The Distribution of Aboriginal Tribes and Languages in Northwestern Mexico. UC–IA no. 5.
Spier, L.
1936. Tribal Distribution in Washington. Gen. Ser. in Anthr., no. 3.
Steward, J. H.
1937. Linguistic Distributions and Political Groups of the Great Basin Shoshoneans. AA 39:625–634.
1938. Basin-Plateau Aboriginal Sociopolitical Groups. BAE–B 120.
1939. Some Observations on Shoshonean Distributions. AA 41:261–265.
Stewart, Omer C.
1939. The Northern Paiute Bands. UC–AR 2:127–149.

## TRIBAL SYNONYMS

Akansea, Arkansas = Quapaw
Bungi = Plains Ojibwa (part)
Cáhita = Yaqui, Mayo, Tehueco, etc.
Cajuenche = Kohuana
Carrizo = Comecrudo
Cayuse = Wailatpu
Central Wintun = Wintun
Chippewa = Ojibwa
Chontal = Tequistlatec (or Mayan)
Chuj = Mame (part)
Etago-tine = Daho-tine
Etchimin = Malecite
Gros Ventre = Atsina
Halkomelem = Cowichan and Lower Fraser
Hareskin = Hare
Hasinai = Caddo (part)
Iglumiut = Tahagmiut
Iroquois = Seneca, Cayuga, Onondaga, Oneida, Mohawk
Irritila = Lagunero
Jacaltec = Mame (part)
Kawchodinne = Hare
Kinipetu = Caribou Eskimo
Koso = Panamint
Laimon = Cochimí (part)
Loucheux = Kutchin tribes
Mangue = Chorotega
Mascouten = Prairie Potawatomi
Meskwakwi = Fox
Middle Columbia Salish = Sinkiuse (and Wenatchi)
Minitari = Hidatsa

## TRIBAL SYNONYMS—(*Continued*)

Mohave-Apache = Yavapai
Mohegan = Pequot (part)
Nahane = Tahltan, Taku-tine, Kaska, Abbato-tine, Etchao-tine, Daho-tine
Nestucca = Siletz
Niantic = Narraganset (part)
Nishinan = Southern Maidu
Northern Diegueño = Western Diegueño
Northern Shoshone = Lemhi
Northern Wintun = Wintu
Ntlakyapamuk = Thompson
Paipai = Akwa'ala
Paviotso = Northern Paiute
Peau de Lièvre = Hare
Pinto = Pakawa
Pison = Janambre
Quicama, Quiquima = Halyikwamai
Ree = Arikara
Sahaptin = Nez Percé
Salish = Flathead
Saulteaux = Ojibwa (western part)
Seminole = late Creek offshoot
Siciatl = Seshelt
Sioux = Dakota
Snake = Shoshone (and Bannock?)
Songish = Lkungen
Southern Diegueño = Eastern Diegueño
Southern Wintun = Patwin
Stlatliumq = Lillooet
Susquehanna = Conestoga
Takulli = Carrier
Taratin = Abnaki
Tlingcha-tine = Dogrib
Tobacco Nation = Tionontati
Tojolabal = Chañabal
Uspantec = Ixil (part)
Warm Springs = Tenino, etc.
Westo = Yuchi
Wishosk = Wiyot
Wyandot = Huron
Xuala = Sara
Yopi = Tlapanec
Yukaliwa = Kiliwa

## PRONUNCIATION OF TRIBAL NAMES

Vowels in tribal names have their approximate Continental values, consonants the English ones. In Latin America, Spanish orthography has been retained. The principal exceptions follow.

a has the value of e: Ojibwa, Iowa, Salish, Waco, Nehalim, Chehalis
ai, ay = e: Nottoway, Yanktonai, Kootenay
au, aw = ɔ (originally a or $a^{n}$): Quapaw, Pawnee, Choctaw, Chickasaw, Shawnee, Mohawk, Siuslaw, Sauk, Nauset, Eufaula
ee = i: Cree, Creek, Cherokee, Pawnee, Shawnee, Wateree, Pedee, Santee, Congaree, Sewee, Coree, Occaneechi, Oconee, Chattahoochee, Okfuskee
e silent: Seminole, Mobile, Nanticoke, Osage, Spokane, Sinkiuse
eu = yu: Eufaula
i = ai: Iowa, Kiowa, Siuslaw, Tenino
oo = u: Tillamook, Chinook, Kootenay, Lillooet, Bella Coola, Kickapoo, Yazoo
ou = u: Missouri
ow = au: Powhatan, Cowlitz, Methow, Cowichan
y = ai: Chipewyan
ch = sh: Cheyenne, Chasta Costa
x = sh: Mixe, and others in Spanish orthography
x = ks: Comox

Accented on first syllable: Navaho, Papago, Opata, Cahita; also, in English, Otomi, Zapotèc, Totonac, etc.

## IV. VEGETATION AREAS

Of the various geographical and environmental classifications which might be compared with the native cultural classifications, those dealing with vegetation perhaps prove on the whole the most useful. This is expectable, since culture, through houses and fire, enables even the most backward peoples to work out a residence adjustment in almost any climate or terrain, but does not make possible nearly so decisive a control, even through agriculture, of the general vegetation on which, directly or indirectly, most subsistence is based.

Wissler has pointed out several ethnic correspondences to altitude, as already mentioned; but on the one hand these are of language groups rather than of cultures, and on the other it seems doubtful whether it is the altitudes as such or their respective climates and plant covers that constitute the conditioning factors of the human grouping. Where Wissler has gone farther, as in his Tundra, Mesa, and Jungle division, the classification is too summary to be useful. The culture of his American Mesa, to consider just one example, reached its highest culmination among the Maya proper, whose older as well as newer seats were in the tropical forest.

The strongest case for relation of climate and culture could expectably be made with a classification taking into consideration all or several important elements of climate, such as Köppen's, which is based on temperature, precipitation, and seasonal change. Unfortunately, no detailed classification of North American climates on Köppen's principles is yet available. The limited maps (nos. 13, 24–27) which have been compiled on this plan are briefly considered below in Section XIII, on "Relations of Environmental and Cultural Factors."

Of classifications of the organic environment, the earliest to be developed for North America, the one most intensively mapped, and the one still most influential in geographical studies of faunas and floras is C. Hart Merriam's grouping into "life zones."[1] These zones are in theory empirical, but avowedly depend on temperature—not mean annual isotherms, but cumulative heat[2]—as determinative of physiological activity in plants and reproductive activity in animals. They run, therefore, generally from east to west, with marked swings and convolutions where altitude or other temperature factors are involved. Theoretically, temperature seems too simple a determinant for culture; and a glance at Merriam's map of the United States suffices to show that the life zones have practically no correlation with recognized cultural areas. As a matter of fact, Merriam distinguishes an eastern and a western area, separated approximately by the hundredth meridian, within his life-zone scheme. These two areas obviously differ considerably in both average altitude and precipitation. The fact, however, that the zones are run across them shows that the intent is to accord primacy to temperature.

---

[1] See "Authorities Used," below; also Nat. Geogr. Mag., 6:229–238, 1894.

[2] Normal mean daily heat above 0° C. (6° C. in theory) added up in degrees for the year. This is taken to give the northern limit of species and the life zones based upon them. The southward range of northern species is assumed to conform to the mean temperature of the six hottest consecutive weeks of summer. The life zones conform in general to the first of these two climatic factors, except on most of the Pacific coast of the United States, where cool summers are accompanied by a more northerly flora and fauna than the temperature summations determine elsewhere.

A number of areal classifications of North American natural vegetation have been attempted in the past ten to twenty years. The approach has been somewhat variable. Harshberger's work, for instance, has been phytogeographic, and is characterized by long species lists. Shelford's is ecological and regional, with fauna considered as well as flora. Shantz and Zon attempt to define and map characteristic and prevalent plant covers: a few typical species rather than the totality represented are taken as determinants. Livingston and Shreve base their work on a classification similar to the last named, but use it for objectives that are physiological and etiological. Nevertheless, the major findings of these and other authors are on the whole fairly concordant; and here, then, we would seem to have something detailed with which the classification of native cultures may profitably be compared.

There are several reasons why plant areas should be of special importance in a consideration of culture variations. First of all, they necessarily reflect climate in its totality pretty well, besides accounting for soil influences. Secondly, they underlie fauna, and therefore provide the whole subsistence setting of nonagricultural and nonmaritime peoples; while even agriculture must find itself limited by the conditions which express themselves in natural areas of plant cover. Thirdly, the vegetation areas are, like culture areas, strictly empirical, and not devised according to any preconceived scheme of the primacy of this or that factor.

The plan here followed in the consideration of North American vegetation types is this: The principal areal classifications have been brought together on a series of maps (2–5), drawn to a scale uniform with that used in the tribal, cultural, and physiographic maps (1, 6, 7), and reproduced on transparent paper to allow of superimposition for comparison. In the consideration of culture that follows, such reference as seems appropriate is made to the vegetation of each area. In Section XIII, on environmental factors, some of the more prominent correspondences between vegetation and culture are summarized.

### AUTHORITIES USED FOR THE VEGETATION MAPS (MAPS 2–5)

DOMINION OF CANADA

1930. Map Indicating Vegetation and Forest Cover, 100 Miles to 1 Inch. Department of the Interior, National Development Bureau, F. C. C. Lynch, Director, 1930. (Present map 4.)

HARSHBERGER, J. W.

1911. Phytogeographical Survey of North America. (Engler and Drude, Die Vegetation der Erde, 13.) (Present map 2.)

KELLOGG, R. S.

1910. The Forests of Alaska. U. S. Dept. Agr., Forest Service, Bull. no. 81. (Map from Professional Paper no. 45, U. S. Geol. Survey.) (Present map 5.)

LIVINGSTON, B. E., and SHREVE, F.

1921. The Distribution of Vegetation in the United States, as Related to Climatic Conditions. Carnegie Institution of Washington. (Present map 5.)

MALTE, M. O.

1922. The Flora of Canada. Canada Year Book [for] 1921, pp. 73–81. (Present map 5.)

Merriam, C. H.
1898. Life Zones and Crop Zones. U. S. Dept. Agr., Biol. Surv., Bull. no. 10. (The map is reproduced in Livingston and Shreve.)
Sanders, E. M.
1921. The Natural Regions of Mexico. Geogr. Rev., 11:212–226. (The map is reproduced in Shelford, fig. 13, p. 576.) (Present map 5.)
Shantz, H. L., and Zon, R.
1924. The Natural Vegetation of the United States. U. S. Dept. Agr., Bur. Agr. Econ., Atlas of Am. Agr., Pt. I, The Physical Basis of Agr., Sec. E, Natural Vegetation. (Present map 4.)
Shelford, V. E.
1926. Naturalist's Guide to the Americas. ("Prepared by the Committee on the Preservation of Natural Conditions of the Ecological Society of America, with assistance from numerous organizations and individuals, assembled and edited by the chairman, Victor E. Shelford." Mr. Shelford has been good enough to provide me with blueprints of the original full-size drawings from which his small maps, figs. 3, 4, and 5, had been engraved. These blueprints have served for the preparation of my map 3, which is therefore more accurate than it would have been if based on the published reductions. This courtesy is gratefully acknowledged.) (Present map 3.)
Shreve, F.
1917. A Map of the Vegetation of the United States. Geogr. Rev., 3:119–125. (The map is larger than that in Livingston and Shreve, which is credited to Shreve in that work; but otherwise they appear to be identical.)

These sources aggregate four for the United States and Canada, three each for Mexico and Alaska, and two for Central America. In spite of some differences of objective and method among the several authors, their findings agree nearly enough to make the compilation of a generalized map feasible with no very great difficulty. I have been tempted to make such a combination, but the work should properly be done by a botanist.

The tinting or shading of the original maps has had to be omitted, and key numbers have been substituted. These numbers have been assigned according to a general scheme, so that the same number denotes the most nearly corresponding areas of the different authors. The authors' own terms have, however, been retained for their areas. The concordance or uniformized key list of areal designations follows.

## Concordance Areas

### TABLE 1

### Concordance Key of Vegetation Areas Reproduced in Maps 2–5

Dom, Dominion of Canada (map 4); Ha, Harshberger (map 2); K, Kellogg (map 5); Shr, Shreve (map 5); Ma, Malte (map 5); San, Sanders (map 5); Shl, Shelford (map 3); Sha, Shantz and Zon (map 4).

### 1. Tundra

1. *Tundra.* Ha, Shl: 1, Tundra. Ma: 1, Arctic. K: 1, Tundra, and 1a, Area above Timber. Dom: 1, Treeless Plains and Mountains above Timber Line.

### 2–7. Desert

2. *Salt Desert.* Sha: 2, G, Greasewood, Salt Desert Shrub.

3. *Desert.* Ha: part of 4a, Sonoran Desert. Shl: 3a, Desert, 3b, Extreme Desert. Shr: 3, California Microphyll Desert. Sha: part of 5, CB, Creosote Bush, Southern Desert Shrub. San: 3-4, Desert, including Alkaline Wastes.

4. *Succulent Desert.* Ha: 4a, Sonoran, and 5a, Chihuahuan Desert. Shl: 4, Succulent Desert. Shr: 4c, Arizona, 4d, Texas Succulent Desert. Sha: part of 5, CB, Creosote Bush, Southern Desert Shrub. San: 3-4, Desert; see also 17a.

5. *Creosote Bush Desert.* Ha: part of 4a, Sonoran Desert. Shr: 3, California Microphyll, and 4c and 4d, Arizona and Texas Succulent Deserts. Sha: 5 (=3-4), CB, Creosote Bush, Southern Desert Shrub.

6. *Sagebrush-Juniper Semidesert.* Ha: 6, Great Basin. Shl: 3a, Desert; 6a, Small-Tree Semi-Desert. Shr: 6, Great Basin Microphyll Desert and part of Western Xerophytic Evergreen Forest (remainder appearing on map 5 as 20x); 6a, Texas Semi-Desert. Sha: 6, SB, Sagebrush, Northern Desert Shrub, and part of J, Piñon-Juniper, Southwestern Coniferous Woodland (remainder appearing on map 4 as 20x). Dom: 6-11-20; see 20.

7. *Chaparral Semidesert.* Shl: 7, Broad-leafed Evergreen Semi-Desert, Region of Winter Rains. Shr: 7, Pacific Semi-Desert. Sha: 7, C, Chaparral, Southwestern Broad-leaved Woodland.

### 8–13. GRASSLAND

8. *Swamp Grass.* Shl: 8, Grass Swamp. Shr: part of 8–26, Swamps and Marshes. Sha: 8, MG, Marsh Grassland.

9. *Tall Grass.* Ha: included in 9-10, Prairie-Great Plains. Shl: included in 9-10, Moist Grassland, or Temperate Steppe. Shr: included in 9-10, Grassland. Sha: 9, TG, Tall Grass, Prairie Grassland. Ma: 9, Second Prairie Steppe.

10. *Short Grass.* Ha, Shl, Shr: part of 9-10. Sha: 10, SG, Short Grass, Plains Grassland. Ma: 10, Third Prairie Steppe. Dom: Prairie, Short Grass.

11. *Bunch Grass.* Ha: 11, San Joaquin district. Sha: 11, BG, Bunch Grass, Pacific Grassland. Ma: 11, Dry Belts (of British Columbia). Dom: 6-11-20; see 20.

12. *Desert Grass.* Shl: 12, Dry Grassland, or Semi-Desert Grassland (Bush Steppe). Shr: 12, Desert-Grassland Transition. Sha: 12, DG, Mesquite Grass, Desert Grassland. San: 12a, Short Grass.

13. *Alpine Grass.* Sha: 13, A, Alpine Meadow, Alpine Grassland. Shr: see 24.

### 14–17. PARKLAND AND SAVANNA

14. *Poplar Parkland.* Shl: 14, Poplar Savanna. Ma: 14, First Prairie Steppe. Dom: Grove Belt (mostly poplar in prairie).

15. *Oak Parkland.* Ha: 15a, Transition Prairie-Forest, Oak Openings, and 15b, Texas Cross Timber and Coast Plain Belt, with Live Oaks and Prairies, and part of 29b, Ozark, and 29c, Edwards Plateau Forest. Shl: 15, Oak Savanna. Shr: 15, Grassland-Deciduous Forest Transition. San: 15-30, Deciduous Trees, chiefly Oak.

16. *Moist Savanna.* Ha: various. Shl: 16, Moist Savanna, not distinguished by symbol from 15. San: see 15-30.

17. *Dry Savanna.* Shl: 17, Arid Tree or Bush Savanna. Sha: 17, DS, Desert Savanna, Mesquite and Desert Grass Savanna. San: 17a, Scrub, chiefly Mesquite, Yucca, Agave, Cactus.

### 18–24. CONIFEROUS FOREST

18. *Northern Coniferous Forest.* Ha: 18, Subarctic (Hudsonian), Northern Coniferous Forest. Shl: 18, Northern, or Moist, Coniferous Forest. Shr: 18, Northern Mesophytic Evergreen Forest; (20w, below, is also included by Shr in 18). Sha: 18, S, Spruce-Fir, Northern Coniferous Forest, and 18b, JP, Jack, Red, and White Pines, Northeastern Pine Forest. Ma: 18, Sub-Arctic. Dom: 18, Sub-Arctic Forest, and 18-20, Northwestern Coniferous Forest. K: 18, Timbered, 18a, Sparsely Timbered; (see also 1a, Above Timber; and 21).

19. *Northeastern Coniferous Forest* (*with deciduous admixture*). Ha: 19, St. Lawrence-Great Lakes. Shl: see 25. Shr: part of 18. Sha: part of 18 (S), 18b (JP), and 25 (BM).

Ma: 19, Hardwood Forest. Dom: 19c, Eastern Coniferous Forest, and 19m, Mixed Forest, also Cleared Portions of Eastern Forest Belts.[3]

20. *Western Mountain Coniferous (Pine) Forest.* Ha: 20, Rocky Mountain; 20e, Sierra Nevada, and 20f, San Bernardino; 20g, Santa Lucia area of California Coast Range; 20h, Western Sierra Madre. Shl: 20, Desert, or Mountain, Coniferous Forest. Shr: 20, Western Xerophytic Evergreen Forest (mostly merged in map 5 in areas 6, 3, 4c, 12, 9-10, 4d); 20w (of map 5) is treated by Shr as part of 18, Northern Mesophytic Evergreen Forest. Sha: 20a, P, Yellow Pine-Douglas Fir, 20b, LP, Lodgepole Pine, and 20c, SP, Yellow Pine-Sugar Pine, the three constituting the Yellow Pine-Douglas Fir area of Western Pine Forest; also 20d, WP, Western Larch-Western White Pine, part of Cedar-Hemlock or Northwestern Coniferous Forest; also 20x, Piñon-Juniper, Southwestern Coniferous Woodland (partly merged, in map 4, in areas 5, 6, 12, 10). San: 20h–23, Pine Forest. Ma: 20, Rocky Mountains, and 20d, Selkirk Mountains (see 21s). Dom: 6-11-20, Semi-open Coniferous Forest of Southern Interior British Columbia (sagebrush, bunch grass, yellow pine, Douglas fir, according to elevation); 18–20, Northwestern Coniferous Forest (see 18).

21. *Northwestern Coniferous Forest.* Ha: 21a, Sitkan, and 21b, Columbian; and 21c, Mendocino area of California Coast Range district (=20g and 21c). Shl: Northwestern Coniferous Forest. Shr: 21, Northwestern Hygrophytic Evergreen Forest. Sha: 21, DF, Pacific Douglas Fir, and 21c, R, Redwood, constituting Cedar-Hemlock or Northwestern Coniferous Forest (in which Sha also includes 20d, WP, here reckoned under 20). Ma: 21, Coast Mountains. Dom: 21, Western Coniferous Forest, Coastal, and 21s, Western Coniferous Forest of Interior Wet Belts of British Columbia (=Ma: 20d). K: 21, Timbered (not distinguished from 18 by K; the broken line in map 5 has been added).

22. *Southeastern Coniferous (Pine) Forest.* Ha: 22, Atlantic-Gulf Coastal, with Pine Barren-Strand vegetation. Shl: 22, Southeastern Coniferous Forest; and 22a (=26b), Flatwoods. Shr: 22, Southeastern Mesophytic Evergreen Forest. Sha: 22, LLP, Longleaf-Loblolly-Slash Pines, Southeastern Pine Forest.

23. *Arid Coniferous (Pine) Forest.* Ha: 23a, Eastern Sierra Madre, and 23b, United Cordilleran. Shl: 23, Arid Coniferous Forest. San: 20h-23, Pine Forest.

24. *Alpine Coniferous Forest.* Shl: 24, Sub-Alpine Evergreen Forest, and 24a, High Mountain Forest. Shr: 24, Alpine Summits (see 13).

### 25. CONIFEROUS-DECIDUOUS FOREST

25. *Northeastern Mixed Forest.* (Ha: see 19). Shl: 25, Mixed Coniferous and Deciduous Forest. Shr: 25, Northeastern Evergreen-Deciduous Transition Forest. Sha: 25, BM, Birch-Beech-Maple-Hemlock, Northeastern Hardwoods. Ma: 25, Carolinean. Dom: 25, Southern Hardwood Forest (includes southern strip of Dom: 19m).

*Southeastern Mixed Forest.* See 28, Piedmont Deciduous Forest.

### 26–32. DECIDUOUS FOREST

26. *Swamp Forest.* Shl: 26, Cypress Swamp, or Tree Swamp, and (26b =) 22a, Flatwoods (pine forest interspersed with cypress swamp), and 26c, Magnolia Hammock (higher por-

---

[3] Area 19m of my map 4 is represented by two differently colored areas on the Dominion map, "Mixed Forest" and "Cleared Portions of Eastern Forest Belts, Including the Hardwood Forests of Southern Ontario and Southern Quebec." So the legend in the key. The legend on the map itself reads "Cleared Portions of Hardwood Forest." The color, however, is continued to the very mouth of the St. Lawrence, into New Brunswick and Nova Scotia, and in patches north into the Coniferous Forest as far as 49°; all of which are well beyond the limits of any hardwood forest. The species listed in the key legend for "Cleared Portions" also are nearly the same as the species characterizing the "Mixed Forest." It is therefore evident that while the "Cleared Portions" represent clearing and not any one exclusive type of native vegetation, the great preponderance of the area was natively in "Mixed Forest"; and the whole of it has been so designated, except for the patches wholly within Coniferous Forest. A strip along the St. Lawrence and Lake Ontario was undoubtedly Hardwood, connecting with the area designated as Hardwood on the north side of Lake Erie; but there is no way of demarking it from the major Mixed Forest portion of 19m, except by reference to the maps of Malte and other authorities.

tions of Tupelo low hammock). Shr: part of 8-26, Swamps and Marshes. Sha: 26, CT, Cypress-Tupelo-Red Gum, River Bottom Forest, and 26a, M, Mangrove, Subtropical Forest.

27. *Appalachian Deciduous Forest.* Ha: 27, Appalachian Mountain Deciduous Forest. Shl: included in 27-28-29, Temperate Deciduous Forest. Shr: included in 27-29, Deciduous Forest. Sha: 27, OC, Chestnut-Chestnut Oak-Yellow Poplar, part of Southern Hardwood Forest (=27-28-29).

28. *Piedmont Deciduous Forest (with coniferous admixture).* Ha: 28, Piedmont. Shl: included in 27-28-29, Temperate Deciduous Forest. Shr: 28, Southeastern Evergreen-Deciduous Transition Forest. Sha: 28, OP, Oak-Pine, part of Southern Hardwood Forest (27-28-29).

29. *Mississippi Valley Deciduous Forest.* Ha: 29a, Lacustrine and Kentucky-Tennessee areas, and 29b, Ozark area, of Alleghanian-Ozark district, and part of 29c, Edwards Plateau Forest. Shl: included in 27-28-29, Temperate Deciduous Forest. See also 26c. Shr: included in 27-29, Deciduous Forest. Sha: 29, OH, Oak-Hickory, part of Southern Hardwood Forest (=27-28-29).

30. *Arid Deciduous Forest.* Ha: 30c, Jaliscan. Shl: 30a, Arid Deciduous Forest, and 30b, Deciduous Thorn Forest. San: 15-30, Deciduous Trees, chiefly Oak.

31. *Tropical Rain-forest Subclimax.* Ha: 31c, Gulf Mexican. Shl: 31a, Montane or Cloud Forest, and 31b, Drier Tropical Rain Forest. San: 31d, Jungle.

32. *Tropical Rain-forest Climax.* Ha: 32c, Floridian and Insular areas of Bahaman region; 32d, Antillean region; 32e, Guatemalan region, Central American province; 32f, Costa Rican region, South American province. Shl: 32a, Luxuriant Tropical Rain Forest, and 32b, Tropical Rain Forest Climax. San: 32, Tropical Rain Forest.

This concordance key together with maps 2–5 seems to go as far as is proper for a nonbotanist in blocking out the major vegetation areas on which ecological botanists are in substantial agreement, without attempting to decide upon the respective merits of their bases of classification or the relative accuracy of their areal limitations. At any rate, it provides something against which areal classifications of culture can be compared with reasonable approximation.

The areal limits of the originals have been altered in maps 4 and 5 for certain simplifications, which are here enumerated. These simplifications have been enforced by the nonuse of color, without which many of the minute or irregularly narrow areas, especially of the Shantz-Zon atlas, cannot be reproduced with effectiveness to the eye.

Numerous long tongues of deciduous forest Oak-Hickory bottom lands (29) extending up the western affluents of the Mississippi, and of southeastern River-bottom Forest (26): omitted or shortened.

Small areas or narrow fringes of Alpine Meadow (13), Tall Grass (9), Marsh Grass (8), Salt Desert or Greasewood (2): omitted.

Small high-altitude patches of Eastern Spruce-Fir (18) enclosed in areas of Northeastern Hardwood Forest (25) in the Appalachian ranges: omitted.

Western Spruce-Fir has throughout been merged in the Douglas Fir (21) or Western Pine (21a, b, c, d) areas in which it is enclosed or to which it is marginal.

On both maps 4 and 5 the western Piñon-Juniper areas of Shreve (Western Xerophytic Evergreen Forest) and Shantz-Zon (Southwestern Coniferous Woodland) have been somewhat summarily simplified. It is clear that this plant cover represents in the main a contour vegetation between the pine forests of higher altitudes and the desert shrub and grassland of lower levels. Particularly evident is its association with sagebrush, from which it rises islandlike or marginally as a function of increased altitude or slope, and therefore in numerous patches and irregular fringes. In both maps 4 and 5 the plan has therefore been followed of converting Piñon-Juniper outright into Sagebrush (Great Basin Microphyll Desert, 6) wherever the original maps show the two in contact. Similarly, it has been merged with Creosote Bush (5), Desert Grass (12), and Short Grass (10) of Shantz-Zon; and the California Microphyll Desert (3), Arizona Succulent Desert (4c), Desert-Grassland Transition (12), Grassland (9–10), and Texas Succulent Desert (4d) of Shreve.[4] This leaves as Western Xerophytic Evergreen Forest (20) of Shreve only a compact area in southern Texas, and as Southwestern Coniferous Woodland (20x) of Shantz-Zon a fringe bordering the Yellow Pine (20a) mountain areas of northwestern and central Arizona and western New Mexico, Texas, and Colorado.

Shreve makes no distinction between the eastern (St. Lawrence-Great Lakes) and western (Rocky Mountain) portions of his Northern Mesophytic Evergreen Forest. The former has been retained as 18 on map 5, but the latter redesignated as 20w.

Shreve also does not distinguish between forested Swamps and grass Marshes. His areas of these have accordingly been variously designated in map 5 as 26 (swamp forest), 8 (marsh), or 8-26.

At the points mentioned, therefore, recourse must be had to the original Shantz-Zon and Shreve maps where accuracy of detailed reference is desired. The simplifications introduced in maps 4 and 5 seem unavoidable if effective comparability is the end sought, and seem to do a minimum of violence to the intent of the originals.

Kellogg's Alaskan map shows the presence and density of timber, not the affiliations of the forest growth. His uniform "Timbered" area has therefore been divided, in map 5, between Northern (18) and Northwestern (21) forest, as shown by the broken line. His "Sparsely Timbered" area has been designated as a variant of the Northern Forest, 18a. His areas "Above Timber" are designated as a variant of Tundra, 1a; "Glaciers and Snowfields" are included in this.

Shelford uses a single symbol for Tundra and for Paramos and High Mountain Forest, which are distinguished as 1 and 24a in map 3.

In the reproduction of the Dominion of Canada map, "Cleared Portions" have been mainly counted as Mixed Forest, as already discussed in a footnote to 19m. In the west, Treeless and Above Timber Line have both been designated by the same symbol, 1, Tundra, because of lack of distinction in the original. I have also introduced some simplification of the endless minor interdigitations of "Above Timber" with the various forests: 18; 18-20; 6-11-20; 21s; and 21.

---

[4] Where Piñon-Juniper is adjacent to two of these vegetations it has been assigned to the one that is mentioned first in this paragraph.

## V. CULTURE AREAS: ARCTIC COAST

The native cultures and their areas will now be considered, points of difference from the classifications in current usage being discussed as they arise. The chief characteristics of the present classification are the following:

1. Specific attention is given to geographical and ecological factors.
2. The cultures are treated as historical nonequivalents.
3. Centers or climaxes of culture are defined as sharply as possible.
4. Relations of subordination between and within cultures being sought and expressed, the number of basic areas is fewer, and of specific ones greater, than it has been customary to recognize.

The segregation of the eighty or so areas dealt with is into six groups, namely:

A. Arctic Coast (A in map 6).
B. Northwest Coast (NW).
C. Southwest (SW).
D. Intermediate and Intermountain (I).
E. East and North (E).
F. Mexico and Central America (M).

With the partial exception of the fourth, each of these is believed to represent a substantial unit of historical development, or of a prevailingly characteristic current of culture.

Of course, these six units are also interrelated; and on the grounds of cultural primacy and prevailing historical priority Mexico ought to be considered first. But incompleteness and lack of organization of data make analysis of this area the least satisfactory; so that the reverse order of procedure, from peripheral to central, is for the present almost enforced.

The findings are embodied in map 6.

### Arctic Coast

#### SOURCES OF ESKIMO CULTURE

Eskimo culture is the most differentiated of lower-grade cultures in America. It therefore deserves to be considered as constituting a primary division. This conclusion is strengthened by the unchallenged separateness of Eskimo speech from any other American language, and the marked racial differentiation of the Eskimo from other American natives. Over its whole eastern extent the culture has mixed little with that of the Indians, on either side of the boundary. Traits have crossed, but the culture wholes have remained conspicuously distinct. The culture has, however, numerous Asiatic relations; especially to the northeastern Palaeo-Asiatics, but traceable as far south as the Kamchadal or beyond and west to the Samoyed and perhaps Lapps. Its Magdalenian resemblances, while easily exaggerated and difficult to evaluate, are almost certain to carry some historic significance. This, accordingly, seems the most non-American culture of the continent in its major specific origins. Such a conclusion, however, does not contravene the possibility that the characterization of Eskimo culture as known to us was worked out in America.

As to ecology, there has of late been a tendency to emphasize the importance of the tundra and the caribou as against the shore and the seal in Eskimo culture. In wider historical perspective this seems correct, with reindeer equated to caribou, and with reference to ultimate Eurasiatic origins. The use of coast and of sea mammals would then represent mainly the development of a later American, or Northeast Asiatic-American, phase of the culture. If so, the tundra-caribou form of Eskimo culture found about Chesterfield Inlet and the Back River would have to be interpreted as a secondary, local reconvergence to a much earlier or pre-Eskimo phase.

Steensby's view[1] is the opposite one: he regards Eskimo culture as having originated inland in the Mackenzie drainage, in a caribou habitat probably centering about Great Slave Lake, and as having only later pushed to the sea, where the seal provided winter food, while caribou hunting was retained, wherever possible, as the chief means of summer subsistence. This maritime adaptation was worked out in the region of Coronation Gulf and the isthmuses of Boothia and Melville peninsulas; and there it has persisted in purest form. This argument of Steensby's can, however, be read backward, as Hatt has done, just as well as forward; and the following reasons seem to favor an interpretation the reverse of Steensby's:

1. The formation of the distinctive speech and physical type associated with so much of Eskimo culture is hard to account for in a particular part of a continental interior which lies open, without geographical barriers or peculiarities. The selection of one portion of the Mackenzie drainage as the former home of Eskimo culture is arbitrary. If a caribou origin is to be hypothesized, the entire range of the animal from Alaska to Labrador might as well have been Eskimo.

2. The cultural similarities with Asia are underweighted by Steensby. These are undoubtedly strongest about the Bering Sea; but the fact that there has been recent influencing in this region does not mean that all influencing is recent. It is rather an argument, in the absence of anything specific to the contrary, that the influences are ancient also.

3. Steensby's hypothesis makes the original sea-adapted culture persist in purest form at its original point of characterization, which is contrary to the age-and-area principle that persistences tend to occur at the peripheries. This principle, indeed, applies rather to traits or relatively small clusters of traits than to whole cultures. But while whole-culture types may appear with less purity toward their peripheries, this implies an intensity, complexity, and richness of characterization at the center which the Coronation-Melville area does not possess, being in fact more meager than the Alaska and Greenland peripheries. Its cultural quality is merely a certain "purity" of narrow specialization along selected lines; which is most simply explained as a selection enforced by the extremity of high Arctic environment.

4. Mathiassen[2] has shown that the late prehistoric "Thule" form of Eskimo culture of the Coronation-Chesterfield-Melville area is closer to that of Alaska

---

[1] An Anthropogeographical Study of the Origin of Eskimo Culture (Meddelelser om Grönland, vol. 53), 1917.

[2] Archaeology of the Central Eskimos, pts. 1 and 2, 1927, constituting vol. 4 of Report of the Fifth Thule Expedition [of] 1921–24.

and Greenland than is the present Eskimo culture of the same region. Of 152 elements determined as characteristic of this Thule phase, he first eliminates 57 as common to all Eskimos except where the environment inhibits their use. Of the remaining 95, nearly half, or 47, reappear in recent Alaska and Greenland but are lacking among the Coronation-Chesterfield-Melville tribes, his Central Eskimo proper. Eighteen traits are confined to Thule and Alaska; only 3, all scraper forms, are exclusive property of Thule and Central. Out of 95 nonuniversal Thule elements, 71 reappear among the recent Eskimo from the mouth of the Mackenzie west;[3] 58, among the Greenland Eskimo; 27, in Baffinland and Labrador; only 16 among the four most specialized Central Eskimo groups—Copper, Caribou, Netsilik, Iglulik-Aivilik. In short, a relatively uniform phase of Eskimo culture not long ago prevailed uninterruptedly from Alaska to Greenland, but was later modified, with a shift from whale to caribou or winter-seal dependence, in the very region in which Steensby supposes Eskimo culture to have been formed; whereas the western and eastern ends of the Eskimo range preserved this old phase much more fully.[4] Even Baffinland and Labrador remained somewhat conservative; and here and there, especially on Southampton Island and Smith Sound, isolated communities retained much of the Thule culture relatively uninfluenced by the later Central Eskimo developments, even though local exigencies caused them to adopt modified subsistence habits.

## ECOLOGICAL PHASES

While Steensby's conclusion that Eskimo culture in the Coronation-Melville area developed out of a pre-Eskimo interior culture can therefore be rejected, his work is of the highest importance as an ethnogeographic study. He has for the first time outlined, for the whole of Eskimo territory, the importance of shore line, seasonal open water, drift and shore ice, driftwood or timber, and other natural features as they determine the presence or accessibility of various animal species and the habitual movements, occupations, and implement types of the Eskimo. What emerges from the total array of his succinctly analyzed data is not the primacy or priority of one particular economic adaptation, but a picture of the totality of Eskimo culture as a unit, modified by emphasis or reduction of its traits in direct response to local exigencies. Here seals are the important food, there whales, or walrus, or caribou, or birds, or salmon, while others are as good as unavailable. According to ice and water and season, seals are taken by maupok or waiting at the blowhole, utok or creeping, at cracks or the edge of the ice, from the kayak, or by nets. Even this last method, which is so specially developed in Alaska as to look at first as if its spread were determined culturally instead of ecologically, was known in Greenland, Labrador, and the Central regions. Where continuous ice or snow fields are lacking, the sled of course goes out of use, both in southern

---

[3] This would not mean that an equal proportion of Alaskan elements would be found in the Thule culture, because Eskimo culture especially in southern Alaska has absorbed many elements presumably non-Eskimo in origin. Mathiassen, however, considers the Point Barrow the most similar of all modern Eskimo cultures to the ancient Thule culture.

[4] Birket-Smith, as referred to below, accepts this change in the Central region, but construes it as confirmatory of views similar to Steensby's.

Greenland and southern Alaska; but it is employed to the limit of its utility. Caribou are eagerly hunted wherever they can be got. Whether for the most part they are surrounded, driven in fences, intercepted at passes, or kayaked in lakes depends on the opportunities afforded by the country; more often than not, in fact, two or more of these methods are used in support of one another. So with houses. Where, as on Coronation Gulf and in parts of Baffinland, seals far from shore are the only dependable subsistence available during a considerable part of the year, and the Eskimo have therefore to live on the ice, the snow house may wholly displace that of stone or sod. In southern Greenland and on the Mackenzie, on the contrary, driftwood is abundant, good-sized timbered houses are built, and the snow house is lacking except as a travel shelter. On the rocky islets and headlands of Bering Strait, wood is again abundant and the houses stand on piles against the steep face of a slope. If whale hunting is productive, the umiak is well equipped and paddled; elsewhere, it is a freight boat, rowed by women; or where there are no whales and the short season of open sea is spent inland to get caribou, as on the shores of Coronation Gulf and on Boothia Peninsula, the umiak is absent.

The list herewith shows the principal regional variants of Eskimo economic culture, some twenty-five in number. These are direct ecological adaptations from the basis of a cultural inventory that is or apparently was substantially uniform over the entire Eskimo range: skin boats, harpoon, bladder or inflated skin, spear thrower, three- or four-pronged bird spear, two-winged salmon spear, lamp, stone pot, house platform, type of clothing, ivory carving, kashim or social house, shamanism, type of myth or tale.

TABLE 2

REGIONAL VARIANTS OF ESKIMO ECONOMIC CULTURE

*Northeast Greenland.* Extinct.

*Southeast Greenland.* Angmagsalik.

*Southwest Greenland.* Subarctic culture, without sled, snow house, caribou, maupok or utok seal hunting; kayak hunting highly developed.

*Northwest Greenland.* A rather generalized type of Eskimo adaptation.

*Smith Sound,* Polar Eskimo. Loss of kayak, umiak, sled, salmon and reindeer taking, until renewed contacts with Baffinland about 1865; seal and walrus hunting; special dependence on birds.

*Baffinland.* Seal hunting and winter dwelling on the ice, hence maupok and utok methods and snow house.

*North Labrador.* Sealing from ice edge and kayak; reindeer important.

*South Labrador.* Same but more subarctic.

*Southampton Island.* Ancient (Thule) type of culture modified by a specialization on reindeer hunting; no skin boats.

*Chesterfield Inlet* and Back River: Kinipetu, Caribou Eskimo. Tundra habitat, with dependence almost wholly on caribou, secondarily musk ox; almost no use of coast or sea mammals.

*Melville Peninsula,* including northwest Baffinland: Aivilik, Iglulik. Walrus, seals, reindeer important; snow house replacing stone or sod house.

*Boothia Peninsula* and King William Land: Netsilik. Seals by maupok and utok method, reindeer, no walrus or whales, no umiak, snow house for winter habitation.

*Coronation Gulf:* Copper Eskimo. Much the same as last.

*Mackenzie River.* Large and small whales in summer, seals in winter, salmon. Much wood, timber houses. Here begin the first traits of specific Western Eskimo culture on the supersubsistence level.

*Point Barrow.* Whaling of primary importance; taking of seals especially by netting; reindeer hunting left to essentially inland groups. No snow house here or beyond.

*Kotzebue Sound,* including neck of Seward Peninsula. Seal netting; taking of large whales important.

*Seward Peninsula,* and Diomede and King islands. Whaling, walrus, seal netting, high development of umiak for voyaging; houses on piles.

*Northeast Siberia:* Yuit. Generally similar to last.

*St. Lawrence Island.* Similar especially to last.

*Norton Sound,* especially south side. Similar to Kotzebue, but with more southern influences, such as development of masks. Subarctic conditions begin here.

*Yukon-Kuskokwim deltas.* Shallow shore waters; no whaling; little sealing; prime dependence on salmon, supplemented by other fish and birds; no reindeer. Masks, feasts, wood carving in full development.

*Bristol Bay.* Little known.

*Aleut.* An open-sea culture, with dependence on fish and kayak-hunted seals.

*Kadiak Island* and opposite mainland. Temperate climate; salmon and other fish; high development of kayak. Social attitudes savor of Northwest Coast.

*Kenai Peninsula-Copper River.* Similar.

## CULTURAL CLASSIFICATION AND HISTORY

In contrast to this uniform array of culture elements varied only according to local needs, there is a series of traits, little connected with subsistence, which mark off the western from the central and eastern Eskimo. These include labrets, masks, hats in place of hoods, coiled basketry or other weaving, pottery, grave monuments, mourning feasts or ceremonies, property distributions, war parties, perhaps clans or moieties. None of these extends beyond the Mackenzie, except for sporadic occurrences like occasional masks; many of them stop at or before Point Barrow and are therefore wholly Alaskan. In the main these traits seem to reflect the influence of the Northwest Coast tribes, especially the Tlingit, or, in part, of the Athabascans influenced by the Tlingit. Many may be ultimately Asiatic in origin; some, like pottery and coiled basketry, may have drifted in from a long distance away.

The primary division of Eskimo culture, then, apart from local adaptations comparable to those of shore and interior or valley and hill tribes in California, is into a Central-Eastern and a Western or Alaska-Siberian form, the former being "pure" Eskimo, the latter Eskimo plus a Northwest American and Northeast Asiatic addition.

It is a fair logical question whether the sequence implied in the word "addition" could not be reversed, and Eskimo culture be construed as having developed in its present richer Alaskan form in Alaska, the region of fullest contacts, and then diffused eastward, the rigor of the Coronation Gulf environment filtering out many of its supersubsistence elements, while necessity, and paucity of alien contacts, preserved the subsistence devices relatively unaltered, except for a measure of modification among the Coronation-Melville groups. This view involves a further one, namely, that the contact of cultures in and about Alaska which resulted in the formation of Eskimo culture caused not only absorptions from the contributing cultures, such as masks and labrets, but also new productions such as lamps and skin boats, and that on the spread of this culture eastward out of Alaska the absorptions were in general lost and the new specific products retained. While this seems theoretically improbable, it may well have happened to a considerable extent because of the definite utility of the new productions.

Really, the two views are not incompatible. Influences from several seaboard cultures situated on subarctic or temperate shores may have met in the region of Alaska and produced an Eskimoid type of culture, which then in its eastward spread through the high Arctic became strained out into "pure" Eskimo culture as we know it today, both because of the unusual but necessary concentration in high latitudes on subsistence activities, and because of the specialization of these with reference to sea mammalian life. At the same time the culture impingements in Alaska continued, leading to further absorptions and a general enrichment of the culture, but also to less homogeneity and uniqueness of cast. On this view, the shores of the vicinity of Alaska would have been both an ancient and a modern meeting ground of various cultural influences, pre-Eskimo, non-Eskimo, and Eskimo; and from the stock of sea-adapted culture there accumulated, the shore peoples eastward selected, not only once but more likely several times or continuously, such elements as they could use, besides of course modifying them. Alaska then would be the point of origin—in the sense of point of crystallization—of Eskimo as contrasted with non-Eskimo culture as a whole, and at the same time the area where this culture remained most "mixed," least set apart by rigorous restriction to its own specializations.[5]

This interpretation of the culture, incidentally, accords well with the situation in racial type and speech, both of which are "purer," more characteristically or undilutedly Eskimo, in the east than in the west, especially if the Aleut are included.[6]

The fundamental difficulty about deriving Eskimo culture from the northern interior of America is that it is hard to conceive of an inland culture originating the many definite and accurate devices relating to the sea and sea life which constitute the most fundamental and distinctive aspects of Eskimo culture. To take as an example Birket-Smith's "two main props of coastal life" in the far north, the blubber lamp and seal hunting at breathing holes,[7] these both depend on and relate exclusively to sea mammals. The antecedents for the invention or development of these traits are much more nearly given in a subarctic sea-adapted culture than in a ruminant-hunting, wood-burning tundra or forest culture. The case is much like that of a people practicing a specialized agriculture, such as desert irrigation, under rigorously limiting natural conditions. All we have learned of the nature of culture processes in the last generation would lead us to expect such an agriculture to be derived from a more generalized, less conditioned type of agriculture evolved elsewhere, rather than from a tour-de-force "invention by necessity" by a nonagricultural population finding itself in a habitat with insufficient wild food.

---

[5] Boas, Die Resultate der Jesup-Expedition, ICA 16 (1908, Vienna):3–18, 1910, inclines to the view, on folkloristic grounds, that there once existed a connection between the peoples of the Sea of Okhotsk and of British Columbia, which later was more or less interrupted by the arrival of the Eskimo about Bering Strait. If for "arrival of the Eskimo" we substitute "development" or "crystallization of Eskimo culture," Boas's opinion is not incompatible with that advanced here.

[6] Boas, AMNH–B 15:369, 1907; Hrdlička, BAE–R 46:364, 1930.

[7] AA 32:623, 1930.

My division of Eskimo culture into primary Western and Eastern types is therefore not only statically descriptive of recent conditions, but also likely to reflect a fundamental historic current. The Western form is at once older and more heterogeneous, the Eastern is strained out. Both are littoral, and have been such as far back as they may properly be designated Eskimo.[8]

Within the Western or Alaskan area, the Aleut evidently constitute a subarea, whose validity is reënforced by the relative distinctiveness of Aleut speech and somatic type. Some of the specialists in the Eskimo field seem to regard the Aleut as an "Eskimoized" population; that is, an originally non-Eskimo group which took on something of Eskimo language and culture. It does not seem necessary to go quite so far in hypothesis as this. The Aleut may represent merely a specialization away from the other Eskimo. They live in a cul de sac, rather isolated from contacts; and their environment certainly is distinctive: oceanic islands, a damp, foggy, windy, raw climate. One could perhaps speak with more assurance of the place of Aleut culture if more were known of the Eskimo to the east of them.

Whether these Eskimo of the stretch of coast east of the Aleutians, from the Alaska Peninsula to the Copper River, are to be classed rather with the Aleut, with the Alaska Eskimo generally, or as a distinctive subunit of these, it is difficult to decide without an intensive comparative study, and for this modern ethnographic data are not available. The subarctic environment per se of these Eskimo does not seem to have differentiated them much if any more than it has the southern Greenland Eskimo; they make kayaks, for instance, in an area of good growing timber. But on the cultural levels above those connected with subsistence they have been exposed to strong Indian influences, as the Greenlanders have not. These influences, Tlingit in recent times, have presumably been strongest at the eastern border, about the Copper River. Also, the stretch from the Kenai Peninsula to the Copper River is sometimes reckoned as ecologically more nearly related to the habitat of the northwestern Tlingit than to the Bering Sea and Arctic coast of Alaska.[9]

The inland culture of the Chesterfield Inlet-Back River or Caribou Eskimo may probably best be regarded as primarily a specially marked instance of the ecological response variations discussed above. This group seems never wholly to have lost touch with the sea. They have merely gone one step farther than the inland minority of the Point Barrow division. These two groups are of interest as true tundra dwellers; but it is doubtful if they are very much more specialized away from "normal" Eskimo sea-mammal and shore life than are the Yukon and Kuskokwim salmon-eaters.[10]

---

[8] Steensby's "Neo-Eskimo area of acculturation" differs from the Alaska Eskimo area as here defined. He makes its distinctive features recent, mainly derived from Asia, and localizes it about Bering Strait, with Kotzebue and Norton sounds. My Western area takes in, with its variants, all the Eskimo-inhabited shores of Alaska, and is both ancient and modern, with the recent absorptions rather from American Indian than Asiatic sources.

[9] Compare below, Northwest Coast, Northern Maritime subarea, p. 29.

The recent Eskimo may therefore be classified culturally as follows:

1a. Central-Eastern: From Coronation Gulf east.
    1b. Barren Ground: Caribou Eskimo.

2a. Western: Mackenzie, Alaska to Bristol Bay, Siberia. The Yukon-Kuskokwim Delta may prove to belong with 2c rather than here.
    2b. Aleut.
    2c. Pacific Coast: Alaska Peninsula to the Copper River.[11]

## SUMMARY

The origin of Eskimo culture is unknown. Its ultimate affiliations seem Asiatic rather than American. The area of specifically Eskimo characterization may have been American or Asiatic-American; but it is unlikely to have lain east of Alaska, and it was coastal, with primary dependence on sea mammals and fish. This culture came to extend from Siberia and Alaska to Greenland. After a time it became somewhat modified in the Central area, especially west of Hudson Bay, partly through the lure of caribou hunting, partly through impoverishment due to arctic rigor. Meanwhile, too, perhaps even earlier, the Western Eskimo culture began to alter as a result of the fairly developed cultural contacts to which it continued to be exposed. The most important of these influences were much diminished north of Bering Strait, more so beyond Point Barrow, and practically terminated at the mouth of the Mackenzie, though a few of the older elements may have penetrated sporadically even as far as Greenland. Also, these Northwest Coast and Asiatic influences have continued to recent times, possibly with increased force. Otherwise, Eskimo culture has retained its stock relatively unaltered, except for a modification into about two dozen local phases, which are essentially ecological subsistence adaptations with resultant reduction or emphasis of common culture traits.

---

[10] K. Birket-Smith takes the opposite view in The Caribou Eskimo, Rept. Fifth Thule Exped., vol. 5, pts. 1 and 2, 1929 (esp. pt. 2, 212–233), and in a controversy with Mathiassen, AA 32:591–607 and 608–624, 1930. He postulates an inland Proto-Eskimo stage, more or less represented today by the Caribou Eskimo, and only by them. This on pushing to the littoral became Palaeo-Eskimo culture, which in turn developed into Alaskan, Central-Thule, and Greenland phases of Neo-Eskimo. This was still later replaced in the Central region by the Eschato-Eskimo culture, which is closely allied to the Palaeo-Eskimo, and therefore represents a reversion due to renewed influences or advances by Eskimo who had remained inland with the Caribou group. See especially Car. Esk., fig. 5, p. 232; also ICA 23 (1928, New York):470–475, 1930. The evidence on which his and Mathiassen's construals rest is too detailed to be gone into here.

[11] H. B. Collins, Jr., Culture Migrations and Contacts in the Bering Sea Region, AA 39:375–384, 1937, reviews judiciously the recent archaeological and other data which at once illuminate and complicate Western Eskimo culture history. The Thule culture, he concludes, entered Alaska from the east, and late, contemporary with the Punuk phase (post-Old Bering Sea of St. Lawrence Island and post-Birnirk). It is not known archaeologically south of Cape Prince of Wales, and in the historic period it is well represented at Point Barrow. Collins also directs attention to the finding of Jenness that the greatest break within Eskimo speech comes between Norton Sound and the mouth of the Yukon. All this suggests that my primary classification above may have to be revised, the "Central-Eastern" Eskimo division extending westward beyond the Mackenzie to Bering Strait, the "Western" lying south thereof. The two grand divisions would then be Eskimo on the Arctic Ocean and Eskimo on the Pacific.

## VI. CULTURE AREAS: NORTHWEST COAST

The culture of the Northwest or North Pacific Coast is that one of the more highly developed and differentiated cultures in America which has been least affected by influences from Middle (Nuclear) America. It has been reached to an unusual degree by influences from Asia. Some of these, slat or rod armor and hats, for instance, show distributions as far southwest as the higher civilizational centers of eastern Asia. Many other resemblances are vaguer, or show interrupted distributions, but carry even farther, to Indonesia and Oceania: carving, masks, wealth emphasis. Similarities to the eastern Palaeo-Asiatics, however, may be due to cultural currents from America as much as into it.

A third trend of the culture is the unusual degree to which its material, native and imported, has been worked over into its own patterns. The area is evidently one of unusual intensity of cultural activity. This intensity seems to have been still heightening at the time of discovery, and to have received a further temporary impetus from the first European contacts. This powerful repatterning has probably disguised the foreign origin of much Northwest Coast culture material. The historic source of material of this kind should prove discernible when intensive knowledge of the area is combined with a willingness to consider the probability of remote origins. The present indications are that perhaps as much of the reworked material derives from Asiatic as from distant American centers.

Recent conditions at the southern end, as well as the slender archaeological evidence available, suggest that the Northwest Coast culture was originally a river or river-mouth culture, later a beach culture, and only finally and in part a seagoing one. This means that the recent hinterland cultures of the Columbia-Fraser drainage (Plateau) and of the Intermountain Athabascans evidently provide approximate illustrations of an early stage of Northwest Coast culture. This situation is implicit in Wissler's basing of both the Northwest Coast and the Plateau culture on a Salmon Area. Of course no mechanical subtraction of hinterland from coast culture suffices for a true estimate of the kind or amount of culture specialized on the coast, even apart from the variant conditioning of subsistence, because the hinterlands have secondarily absorbed culture material and forms from the coast as well as from the east.

The ecological correspondence is remarkably close for the Northwest Coast. The vegetational-climatic area of the Northwestern Hygrophytic Coniferous Forest (maps 2–5) tallies almost absolutely with the cultural one. This forest is generally considered as extending into northern California. The culture extends to Cape Mendocino and the lower Eel River, which lie about at the middle of the Redwood belt (map 4). This Redwood strip may be viewed as a specialized southern extension of the northwestern forest; its denser and more characteristic part is its northern half, which belongs clearly to the Northwest culture.

The areal types of the Northwest culture can be formulated only tentatively. While this is one of the more intensively studied regions of the continent, interest has been away from classificatory and developmental problems.

1. *Northern Maritime.* Tlingit, Haida, Tsimshian; probably also the Haisla.[1] Three subtypes can be distinguished.

1a. *Northern Maritime Mainland.* The Tlingit northwest of the Alexander Archipelago, on the coast backed by glaciated mountains. Resemblances to Athabascan inlanders seem fairly strong. This is also a separate ecological region. Osgood[2] distinguishes a Southeastern and a Glacial Coast region in Alaska, separated approximately by the Lynn Canal. The present or Northern Tlingit subarea corresponds with the Glacial Coast region; but Osgood carries this farther west, to include the Kenai Peninsula. From the Copper River to Kenai the coast was Eskimo; and, as already stated, these Eskimo, the Ugalakmiut and Chugachigmiut, seem to deserve setting apart as a subtype. In any event, if the Glacial Coast region of Alaska is a valid natural area, it marks the meeting place of two deeply different cultures, Eskimo and Northwest Coast. Whether Eskimo or Tlingit are the later intruders is not known; but the Eskimo in this tract have taken over more obviously Tlingit traits than have the Tlingit adopted the Eskimo ones. It is of course possible that at an earlier period, when the Northwest culture was as yet less developed, the Eskimo influence was the more potent, but that the elements derived from it[3] have long since been worked over so as to seem native Northwestern. Very little is known about the phenomena of border contact between Tlingit and Eskimo; and an important study is indicated here if the two cultures have not yet disintegrated too completely.[4]

1b. *Northern Maritime Archipelago.* Southern Tlingit, Haida, Tsimshian proper. By general agreement these tribes represent the culmination of Northwest Coast culture during the nineteenth century.

1c. *Northern Maritime River.* Niska, Gitskyan, Haisla. A less intensive variant of the Northern subculture, localized on rivers or inlets rather than on the sea.

2. *Central Maritime.* Central British Columbia coast, northern and western Vancouver Island, Cape Flattery. The peoples are Bella Coola, Heiltsuk, Kwakiutl proper, Nutka, Makah, Quileute, Quinault, perhaps Chehalis. According to Dr. Olson, whale hunting and secret societies extended to the Quinault. It is on the basis of these traits that the limit of the area has been drawn just north of Shoalwater Bay. This area is predominantly Wakashan. The interior water boundary comes about Cape Mudge in latitude 50°, which seems to mark also a climatic and minor vegetational change: to the south, the east side of Vancouver Island is relatively dry. Two subdivisions are recognizable in the Central Maritime area:

2a. *Northern Central Maritime.* Kwakiutl, Heiltsuk, Bella Coola, with more developed art, ritual, and social organization, but mainly facing protected water.

2b. *Southern Central Maritime.* Nutka and seaward tribes of Washington, with whale hunting.

3. *Gulf of Georgia.* Southeastern Vancouver Island, mainland coast of southern British Columbia, north side of Olympic Peninsula. Wholly Salish and facing protected salt water; climate somewhat less humid than in the preceding. In terms of water, the specifying elements are the mouth of the Fraser, the Gulf of Georgia, and the straits of Georgia and Juan de Fuca.

---

[1] The northern mainland Kwakiutl have not been studied systematically and are difficult to place. The Haisla are tentatively assigned to area 1, and the Heiltsuk (Bellabella, Rivers Inlet) to area 2, on the basis of Boas's statement (AA 26:323–332, 1924) that the former have, and the latter have not, matrilinear exogamic clans.

[2] "Alaska," in Shelford, work cited, 141–146, 1926.

Harshberger has the Sitkan region (map 2, no. 21a) extend from northern Vancouver Island to beyond the Copper River, excluding the Kenai Peninsula.

[3] Whale hunting, for instance, which in the historic period was practiced in the Northwest area only on Vancouver Island and about Cape Flattery.

[4] K. Birket-Smith and F. de Laguna, The Eyak Indians of the Copper River Delta, Alaska (Copenhagen, 1938), have described the remnant of a newly determined tribe which is non-Eskimo, non-Tlingit, and wholly distinct from the previously recognized Athabascans of the Copper River above the delta. The speech carries Athabascan suggestions, but if Athabascan it is greatly deviant; it may prove to be a fourth member of Na-Dene (Athabascan, Haida, Tlingit).

4. *Puget Sound.* Salt but still water. Salish, plus probably the Chimakum. Groups without true secret societies. The Skagit probably belong to this group; the Lummi and Nutsak, also the Klallam, to the last.[5]

5. *Lower Columbia,* with coast from Shoalwater Bay to Umpqua Mountains. Chinook, Chehalis, Tillamook, and Yaquina-Alsea-Siuslaw.

6. *Willamette Valley.* Interior. Kalapuya.

7. *Lower Klamath.* Northwestern California with Rogue and upper and middle Umpqua drainage in Oregon. Mainly Athabascan, but also including Kus, Yurok, Wiyot, Karok. Culmination on lower Klamath, among Yurok, Karok, Hupa.[6]

A subperipheral transition region is recognizable, extending in an arc from the Shasta on the middle Klamath to the Wailaki and Sinkyǫne on the middle Eel, but is here reckoned as part of the California culture area.

These areas are far from equivalent in cultural intensity and depth. The climax of the region seems long to have lain in its northern half. The four southern areas are distinctly subclimatic and culturally peripheral. During the last half of the nineteenth century, the climax must be credited to the Northern Maritime tribes, on account of their aggressiveness and the vigor of their art. Their culture was then in an expansive, acquisitive phase. Previously, the climax was probably situated in the second or Wakashan group,[7] who worked out the Hamatsa cannibal ceremonies which the northerners later borrowed. Still earlier, the climax may have lain in the third area, about the mouth of the Fraser and the opposite shore of Vancouver Island. If the theory is correct that the Northwest culture as a whole originated on rivers and only slowly ventured on the open sea, this area would be the logical one for the first stages of its characterization. The Lower Columbia area may have experienced similar impulses, but these would have been checked by the debouching of its river on a straight, rugged coast, without sheltered salt waters to encourage the apprenticeship of transformation. Puget Sound is a backwash. It may have been an important area in early stages of the culture, but its very shelteredness from the sea destined it to relative lag as the oceanward development proceeded. The Willamette Valley formed even more of a pocket. It is the only interior culture in the Northwest region, and is probably best construed as an inland modification of a form of the primitive river phase. The fact that the valley contains enough prairie to cause it to be classified by some authorities as grassland (map 5) would have contributed to its cultural differentiation.

---

[5] H. Haeberlin and E. Gunther, The Indians of Puget Sound, UW–PA 4:1–84, 1930, print a map of Puget Sound tribes (p. 8) which shows a distribution somewhat different from that given in map 1 accompanying the present work. It is significant that several tribal territories (Skykomish, Snuqualmie, Muckleshoot) are shown entirely away from salt water, and others (Skagit, Nisqually) barely touching it.

Another map has recently been issued by Spier in Tribal Distribution in Washington, Gen. Ser. in Anthr., no. 3, 1936.

[6] The Tolowa are clearly subclimax as against the Yurok, and the Tututni apparently more so. With the Kus and Siuslaw, Lower Columbia elements begin to appear and are stronger among the Alsea and Tillamook. The Kus and Siuslaw thus cannot be split, as the text has it, but whether they both go rather with Lower Klamath or with Lower Columbia is less clear. These findings rest on field studies in 1934 and 1935 by Philip Drucker, The Tolowa and their Southwest Oregon Kin, UC–PAAE 36:221–300, 1937, and H. G. Barnett, CED VII–Oregon Coast, UC–AR 1, no. 3, 1937.

[7] Among the Heiltsuk Kwakiutl, to be exact, according to Boas, USNM–R 1895:661, 664, 1897. The evidence is native tradition, but confirmed by ceremonial names which are Kwakiutl.

It is the only tract in the Northwest area which is not continuously forested. The Northwest California subclimax has clearly been built up on a basis of river habitat. Its center lies on the only stream south of the Columbia to drain from the interior of the Sierra-Cascades mountain wall, and nearly at the meeting point of three forests, namely, the Northwest Coast Douglas Fir, the Northwest Extension Redwood, and the California Pine (map 4).

It is evident that the descriptive subdivision of the long north-south Northwest area into seven to ten approximately transverse segments resolves itself, as soon as the relations of the segments are viewed with interest in environmental adaptation and historic development, into a classification into longitudinal belts, nearly but not quite parallel to the coast and expressive of degrees of utilization of water, from river to mouth to still salt water to ocean, with a subsidiary use of ocean replacing primary adaptation to inland salt water where this is not available. According to these degrees of water adaptation, the areas group thus: 1, Willamette; 2, Klamath, Columbia, Puget Sound; 3, Gulf of Georgia; 4, Central Maritime, Northern River, Northern Mainland; 5, Northern Archipelago. Within each belt the more northerly subareas usually have the more intensive culture. Also, except in the most southerly area, the center of intensity within each area seems to lie in its northern portion. The degree of development of such luxury aspects as art and society rituals is in agreement with this environmental-historical view.

From both the northward centering and recent northward trend of the climax of the whole Northwest Coast, it is expectable that more refined analysis will confirm the conjecture that Asiatic influences perhaps were more potent than Nuclear (Middle) American ones in the specific shaping of Northwest Coast culture. If direct Oceanic influences have ever to be reckoned with, they may complicate the picture.

## VII. CULTURE AREAS: SOUTHWEST

The distinctness of the Southwest was recognized long before there was any thought of general areal classification. The name refers of course to position within the United States. Wissler, however, included northern Mexico, nearly to the Tropic of Cancer, in the area; and in this he was followed by me, in my modification of his hemispheric classification.[1] As this inclusion has provoked no criticism, it may be assumed that dissent has not been lively. According to this view, about half of the native Southwest lay in what is now Mexico. But this half is little known. Both archaeological and ethnological studies have been extremely meager, and until recently the Spanish ethnographic documentation from the period of exploration and settlement had not been gone over systematically.

Now at last there is available a digest and interpretation of the documentary data by Beals.[2] This has been specially drawn upon for the consideration of Mexican areas, farther on in the present monograph. The Beals data were necessarily brought together primarily with reference to the situation in Mexico; just as the current data on the American part of the Southwest have been gathered as relating to the situation in the United States, especially to the Pueblos and their relations to the east, north, and west. The two sets of data thus by no means integrate fully; and it will require much fuller information, and its gradual digestion, before anything more than tentative classifications and attributions of the cultures south of the international boundary can be made. Along the Pacific coast, to be sure, a line of demarcation between the Southwestern and Central Mexican spheres of culture influence can be drawn with a certain degree of confidence, so as to include the Cáhita in the Southwest, the central Sinaloa peoples in Mexico.[3] In the interior, however, it is much more dubious how groups like the Tarahumar and Concho should be construed as affiliating. The Tarahumar are here provisionally classified as in the Southwest, the Concho in the Mexican sphere. The situation is considered further in the Mexican section, especially with reference to the linguistic relations that might be pertinent.[4] All in all, however, the question of the Mexican-Southwestern frontier must be left an essentially open one for the present.

I have recently pointed out[5] that the known Southwest appears to comprise two related but consistently distinctive culture types: one characterized by the Pueblo culmination, and one which might be named the Sonora-Gila-Yuma. The common elements such as agriculture, cotton, pottery are obvious. The Pueblo culture shows masonry, clustered houses, stories; the kiva ceremonial chamber, altars and sand or meal paintings, masks and ancestor impersonation, priestly offices, elaborate ritual, much visual and verbal symbolism with special reference to colors, directions, fertility, and emergence; matrilinear descent; pacific inclinations; pottery with a whitish ground, polychrome or glazed painting, and texture decoration by corrugating. The Sonora-Gila-Yuma culture possesses adobe, wattled, or brush houses, village instead of town type of settlement; no kivas and few altars, little visibly expressed symbolism; simple rituals with few masks; shamans rather than priests; patrilinear institutions; warlikeness; a pottery reddish, monochrome or with one design color, uncorrugated; canal or river overflow irrigation.[6]

---

[1] Anthropology, fig. 34, 1923.

[2] The Comparative Ethnology of Northern Mexico before 1750, UC–IA no. 2, 1932.

[3] C. O. Sauer, Aztatlán, UC–IA no. 1, 1932.

[4] For instance, the Tarahumar and Concho affiliate linguistically with the Opata and Cáhita, who are here reckoned in the Southwest; the Tepehuán with the Pima, also considered Southwestern. See below, and UC–IA no. 8, 1934.

[5] UC–PAAE 23:375–398, 1928.

As the vegetation maps show, the Pueblo area lies fundamentally within the sagebrush-juniper-piñon association, with good-sized areas of short grass and desert grass, and pines in the mountains (maps 2–5, 8). The Sonora-Gila-Yuma area is prevailingly one of true desert, with the creosote bush selected by some authors as the characterizing plant (maps 4, 8), the succulence of the aridity-resisting vegetation of certain districts emphasized by others (maps 3, 5); and, except in the Sierra Madre, with an almost complete absence of forest growth. These two distinct plant covers are of course a function of altitude and climate. The Sonora-Yuma subarea averages much lower than the Pueblo; the heat equator passes through it; evaporation is as high as precipitation is low; and a number of included tracts are reckoned as extreme desert (map 3). The Pueblo region is high, cold in winter, and subdesert (map 3)—a borderland between technical desert and steppe,—in fact, more largely the latter (map 24). The correspondence of environment and culture is close for these two subareas. Geographically, they lie roughly northeast and southwest toward each other. In Arizona, the Mogollon rim forms the boundary between the Colorado Plateaus and Basin-and-Range physiographic provinces, as well as between the two cultural subareas.[7] Desert conditions extend southward through much of Sonora and Mexican California. Whether Chihuahua forms part of the same desert or a somewhat differentiated one, is not clear. A differentiation seems more likely on account of the greater altitude. It would apparently also fit the cultural situation better.

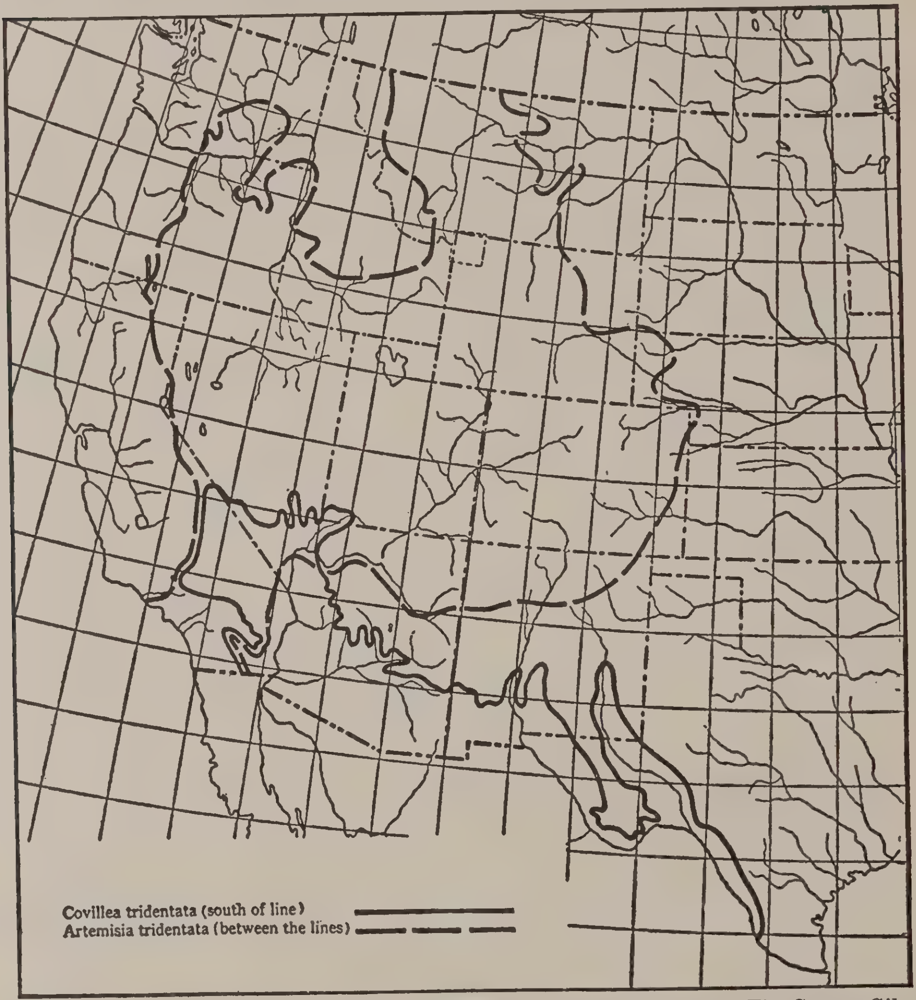
On its other side, the Pueblo environment extends northwestward beyond the limits of Pueblo or Southwestern culture. The sagebrush-juniper association prevails over the Great Basin and beyond into the Snake portion of the Columbia drainage. Here, then, the correspondence of ecology and culture, at least in the recent distribution of the latter, breaks down. It holds sharply within the Southwest—at least its known portion; it does not hold beyond. The fact that the environment of one of the two Southwestern subareas runs far outside the cultural Southwest strengthens the probability that the two subcultures are fairly distinct, because it suggests that the history of one of them contains influences lacking in the other.

---

[6] Among archaeologists Hohokam has now come into general usage for the prehistoric phases of what is here called Sonora-Gila-Yuma culture. Sequences within Hohokam are now almost as well known as within Basket Maker-Pueblo, thanks especially to the work of Gila Pueblo as directed by H. S. Gladwin and published in the Medallion Papers since 1928. Kidder has recently proposed Anasazi as a counterpart term to replace Basket Maker-Pueblo (The Pottery of Pecos, 2:590; with Anna O. Shepard).

[7] The Sonora-Gila-Yuma subarea lies largely in the Basin-and-Range and allied Sonoran Desert and Sierra Madre provinces. The Pueblo subarea is physiographically more varied, extending over portions of the Colorado Plateaus, Rocky Mountains, Basin-and-Range, and Great Plains provinces. See map 7.

It seems best first to delimit and subdivide the two areas in their recent manifestation, and then to consider their inferable history.


Covillea tridentata (south of line)
Artemisia tridentata (between the lines)

Map. 8. Creosote Bush and Sagebrush; from Livingston and Shreve. The Sonora-Gila-Yuma area falls typically within the occurrence of the former; the ancient Pueblo area, in both, plus forest and grassland,—but in its present range is restricted to sagebrush or immediately adjacent vegetation. The sagebrush range, however, is far greater to the north than the widest Pueblo extension at any period.

### 1–2. PUEBLO SUBCULTURE TYPE

1. *Pueblo:* Tano, Keres, Zuñi, Hopi. If Sapir's conjectures in regard to the ultimate linguistic affiliations of these groups are correct, half or more of them would be of Uto-Aztecan origin in the wider sense—Aztec-Tanoan. The true Pueblo culture is so distinctive, and so well known both ethnologically and archaeologically, that its detailed discussion here is unnecessary. It forms

a very definite climax of established antiquity and of an intensity possibly equaled only at one or two other points north of Mexico. This climax culture appears to have reached its peak, at least in certain aspects, some centuries before Caucasian discovery, and its greatest areal extension several centuries earlier still. At no period of its history is there indication of its having influenced surrounding or distant cultures at all strongly. It constituted a localized and self-contained culmination.

2a. *Inter-Pueblo:* Navaho; and 2b. *Circum-Pueblo:* Apache. The Navaho have accepted somewhat heavier Pueblo influencing than the Apache. Both these Athabascan groups made pottery and farmed only to a subsidiary degree. The cultures of both gradually became, as it were, parasitic on Caucasian culture in their economic aspects, although in different ways: the Apache frankly predatorily, with the taking over chiefly of horses and weapons; the Navaho rather by theft and imitation, with rearing of flocks, weaving of wool, and working of silver. It is not known how much of these practices came to the Navaho through the Pueblos and how much directly from Caucasians. At any rate, their culture had essentially taken on its present-day aspect by the middle of the eighteenth century, possibly considerably earlier. It has also flourished, mainly along the lines then set, since the progressive Americanization of the Southwest, until today the Navaho constitute a definitely perceptible factor in the economic life of New Mexico and Arizona. They have multiplied, are still spreading territorially, and have worked out a unique and interesting subsistence system which is different from both the native and the Caucasian economies out of which it has been hybridized.

In origin the Navaho and Apache are of course one people, as shown by their close dialectic relationship and by the Spanish habit of classing the Navaho as Apaches. The differentiation between them[8] seems the result less of difference in natural environment than of difference in cultural geography. The Navaho habitat lay between the Hopi and Rio Grande Pueblos, with Zuñi on a third side. They were also fairly effectually shut off by Apache groups from direct involvement in the unsettled, war-embroiled life of the western edge of the Plains. Distrusted and feared though they might be by the Pueblos, especially after Spanish pacification, they were removed from the atmosphere of war as a prime occupation of life; took up the gainful arts of their Pueblo and Spanish neighbors; and laid the foundation of the special economic system which they still adhere to. Hand in hand with this went two other developments: a greater receptiveness toward the material of Pueblo ritual, and an accelerating increase in numbers. The result of the latter factor was that whereas three or four hundred years ago the Navaho constituted a small and culturally scarcely distinguishable fraction of the Apache, they are now well set apart in customs from this parent body, and perhaps five times as numerous as all its other divisions combined.

In terms of precise ethnological knowledge, the Apache are, with the possible exception of the Ojibwa, the least-known surviving North American group among any of like areal extent and historic importance.[9] Their numerous tribes or bands may be grouped according as they lived west or east of the Rio Grande. Roughly, the two divisions correspond to the modern official and reservation classification into White Mountain and San Carlos Apache and Mescalero and Jicarilla Apache.

---

[8] This differentiation is similar in some ways to that of the Yaqui and Mayo, as discussed below.

The westerners comprise the Tonto, Coyotero, Pinal, Arivaipa, Pinaleño, Chiricahua, Mogollon, Gileño, and Mimbreño.[10] Some of these are probably subdivisions of others. Their total range was from the Tonto Basin in central Arizona to the Mimbres-Guzmán Basin southwest of El Paso in Chihuahua. The beginning of their habitat formed the effective Spanish northern frontier in the eighteenth century, and thus largely determined the modern international boundary along western New Mexico and eastern Arizona. These Western Apache groups lived away from the plains and the dependable range of the bison, and were indubitable southwesterners.[11]

The Eastern Apache,[12] on the contrary, seem all to have depended considerably, and some of them perhaps primarily, on the bison hunt. They included the Jicarilla of the headwaters of the Rio Grande—sometimes considered a branch of the next; the Faraones between the Rio Grande and Pecos; the Mescalero along the Pecos; the Llaneros or "plainsmen" between that stream and the Colorado; and the Lipan southeast as far as to the Karankawa of the marismas or swamps of the Texas coast. Of these the Lipan, although true Apache in origin, formed an outpost, and are included below, on geographical grounds, though perhaps wrongly, in the South Texas culture area. The others all appear to have fronted the plains or to have lived on them until partly crowded back by the Comanche after 1700. They were thus part of the tribes within the old, prehorse, Plains culture; perhaps the principal southern plains tribes. The Kiowa-Apache apparently are a fragment that remained actually in the plains. The Jicarilla, somewhat isolated from all the others in their northerly habitat, became less predatory and effected a quasi relation with the Spaniards and northern Pueblos. The other tribes, or their remnants, have lately come to be known as the "Mescalero." How far the southwestern elements in recent Mescalero and Jicarilla culture predate or postdate the horse and the rolling back of the Eastern Apache by the Comanche, remains to be ascertained. It would seem that their nineteenth-century culture contains absorptions from the Plains culture of that period, probably in the main by way of the Comanche and Kiowa. But if the views set forth below on the development of historic Plains culture are true, these absorptions would prove little concerning relations before the horse.

---

[9] This was true when written in 1931, but fortunately will not hold much longer, because of the intensive studies by Opler, especially on the Eastern Apache, by Grenville Goodwin on the Western, and by Gifford through an element survey of both divisions in 1935. The results should be available in print soon. Goodwin has published a valuable preliminary paper (AA 37:55–64, 1935). It appears that the Apache are excellent and willing informants: the neglect has been by ethnologists.

[10] This classification of Apache tribes follows primarily the 1796 account of Cordero cited in Orozco y Berra, 368.

Goodwin, in the paper cited in the preceding footnote, classifies the Western Apache into five tribal groups: White Mountain, Cibecue, San Carlos, Southern Tonto, Northern Tonto. These subdivide into bands—White Mountain: Eastern (much the largest territory of any) and Western; Cibecue: Carrizo, Cibecue, Canyon Creek; San Carlos: Arivaipa, San Carlos, Apache Peaks, Pinal; Southern Tonto: Mazatzal band and semibands 1 to 6; Northern Tonto: Fossil Creek, Bald Mountain, Oak Creek, Mormon Lake. The twenty-one territories are shown on a map. Their total range is small: about 110 miles by 65. Goodwin's and my Western Apache are, however, not the same. In default of knowledge, I have carried their eastern boundary to the Rio Grande. He defines them as Apaches within present Arizona during historic times *except* the Chiricahua, Warm Springs, and allied divisions, and the Mansos of Tucson. Only my first five divisions are therefore comprised in Goodwin's Western Apache: the Chiricahua, Mogollon, Gileño, and Mimbreño he excludes. He does not say whether the setting apart of his Western Apache rests on dialect, native sentiment, common relations with the whites, or some extrinsic consideration. I hold no brief for the Rio Grande as a line of division: rivers rarely are frontiers in native America. But it would be surprising if the Apache of the upper Gila drainage really belonged ethnically with those beyond the Rio Grande; and Goodwin does not say that they did. Quite likely his Western Apache are simply those now on reservations in Arizona. This would account for his omitting from them the Chiricahua, who were placed with the Mescalero on a New Mexico reservation.

[11] Goodwin, 61, 62, estimates farmed food at 20–25 per cent of the total Western Apache consumption, with the proportion of families farming varying from a majority of those in a band to none, the ratio in general diminishing from southeast to northwest. Of nine wild staples, he singles out mescal (agave) and acorns as most important; the others are sahuaro, mesquite, yucca, sunflower, tuna, piñon, juniper.

[12] Gifford, as a result of his 1935 field survey, classifies the Eastern Apache (that is, those not called Western by Goodwin) into four larger divisions and a total of fourteen subdivisions, as follows. (1) Chiricahua-Warm Springs: Chokalene and Chihene of the San Francisco and Alamosa rivers, upper Gila drainage in New Mexico (Mogollones ?); Shaiahene or "westerners" of the Huachuca Mountains (Nogales-Bisbee area, Arizona); another division to the west of the last-named (these must be the Mansos of Tucson); Indedai of Sonora-Chihuahua. There is no mention of a Chiricahua division proper between the first two and last three and adjoining the "Western Apache" Pinaleño and Arivaipa on the southeast. All this division is well west of the Rio Grande. (2) Mescalero division: Kahoane, the most westerly group, apparently east of the Rio Grande; Ni'ahane, central, presumably about the Capitan Mountains and the Sierra Blanca; Huska'ane, or "plains people," to the

The Eastern Apache lived in territory which in the main seems to have been unoccupied by peoples of Pueblo culture, or only peripherally or sporadically utilized by them. The Western Apache habitat, to the contrary, contains prehistoric Pueblo ruins almost throughout. Several recognized ancient Pueblo areas, Upper Gila, Mimbres, Casas Grandes, lie wholly in historic Western Apache territory; and the westernmost extension of both groups was about the same: nearly to the Verde. It may therefore be assumed that when the

---

east, in the Pecos Valley; Tuetenene, south of the Rio Grande below the mouth of the Pecos, namely, in Coahuila, and said to be "half Lipan"; Zitachisene, of Azúl, toward Chihuahua City, perhaps belonging rather with Chiricahua than with Mescalero. (3) Jicarilla: Setide, "sand people," or Ollero, to the west; Gusgayi, "plains people," or Llanero, on the east (Opler, AA 38:202, 1936, calls them Saidinde and Guʟgahen, and defines their range as on the upper Rio Grande, claiming north to the Arkansas and east to the Canadian). (4) Lipan: Tuensane, "big-water people," westerly; Chishene, "woodland people," easterly; perhaps also Tuetenene, mentioned above. Gifford's "Eastern" Apache totality, like Goodwin's "Western," apparently reflects modern reservation habitat. This in turn may rest on ethnic affiliations; but geographical probability is to the contrary. Until there is specific evidence linking the Chiricahua with the Mescalero rather than with the White Mountain-Cibecue-Tonto in prereservation days, it seems most reasonable to consider all the Apache west of the Rio Grande, or at least in the Gila drainage, as an ethnic unit.

Opler, Chiricahua Apache Social Organization (in F. Eggan, ed., Social Anthropology of North American Tribes, Univ. Chicago, 1937), p. 176, makes the Chiricahua closer, culturally and linguistically, to the Mescalero than to any other Apache group.

H. Hoijer, The Southern Athapaskan Languages, AA 40:75–87, 1938, classifies as follows. The Athabascan languages of the Southwest have a single origin within Athabascan, and have diverged: I, Western group, consisting of IA, Navaho, IB1, San Carlos (Goodwin's "Western" Apache), IB2, Chiricahua and Mescalero; II, Eastern group, consisting of IIA1, Jicarilla, IIA2, Lipan, IIB, Kiowa Apache. Group II thus consists of Apaches on or fronting the plains; I, of Apaches west of the Rio Grande, except that the Mescalero have relatively recently detached themselves from the Chiricahua to live east of the Rio Grande.

Pueblos abandoned their southern territory after having held it through periods 2, 3, and in parts through early 4, the Western Apache were their principal if not sole heirs or dispossessors. Thus the Mimbreño Apache seem to have ranged in Spanish times over most of the area of the extinct Mimbres and Casas Grandes forms of Pueblo culture. The farthest south of the Pueblos at the time of the discovery was in the valley of the Rio Grande about Socorro; and valleys, although important to the farming Pueblos, were not typical Apache habitats, which, apart from the open plains, are often definable in terms of mountain masses.

The Eastern Apache habitat varied a great deal vegetationally. In terms of the Shantz-Zon classification (map 4), it included short grass, tall grass, desert grass, desert savanna, creosote desert shrub, with juniper-piñon and yellow pine along and in the mountains. Wherever agave was available, it is likely to have furnished a staple food much as among the Western Apache; or sotol in its place.

### 3–10. SONORA-GILA-YUMA SUBCULTURE TYPE

I retain provisionally the term Sonora-Gila-Yuma for this moiety of Southwestern culture, although its extent from the Santa Barbara Archipelago to the Sierra Madre makes a broader as well as less cumbersome designation desirable. The area occupies the southwestern half of the Southwest, with prevailing Sonoran (Uto-Aztecan) and Yuman speech, as against the Pueblo languages and Athabascan in the northeastern half.

3. *Fuerte-Yaqui Lowland.* The Cáhita- (Ka'ita-) speaking tribes: Yaqui, Mayo, Tehueco. The area is that of the deltas and lower valleys of the Yaqui, Mayo, Fuerte, and Sinaloa rivers. The early Spanish accounts make both language and customs change definitely, in a northward progress, at the Sinaloa (Petatlán) River. The archaeological remains indicate a marginal or sub-Mexican culture along the Sinaloa coast about as far north as the Mocorito.[13] The archaeology of the northern rivers, probably including the Sinaloa, is much sparser and its types simpler. Cáhita, like Pima, means "no" or "nothing" in the speech in which it occurs, and seems a desirable term to reëstablish, because the ethnic group which it denotes appears to have formed also a distinct cultural unit. The Cáhita, though farmers in rich bottom lands,[14] were politically broken up into independent tribes. The open nature of their lowlands presumably contributed to this condition, as it did among the Yumans of the lower Colorado, in contrast with the isolating, canyonlike character of the Pueblo habitat in which permanent towns grew up. The modern Mayo and Yaqui appear to be two of an unknown number of Cáhita tribes which prospered, grew, and absorbed remnants of less prosperous ones, until they alone retained their identity. They do not adequately represent the former native ethnic situation any more than the modern Navaho and Mescalero-San Carlos-

---

[13] Sauer, Aztatlán.

[14] It is not clear how preponderantly they lived along the actual bottom lands. There is much unflooded, dry plain in their territory covered with monte or thorn-scrub forest; as well as isolated hills and small ranges. But the Cáhita are obvious lowlanders as compared with Pima and Opata.

White Mountain Apache give a picture of the ethnic line-up of the Apache four centuries ago.

Orozco y Berra's map shows a "shatter belt" of small tribes along the lower Fuerte and Sinaloa. The languages of these tribes, except for that of a body of introduced Pimas, are unknown, other than for statements that this one is similar to that, or distinct—which may mean dialectically—from another. Thomas and Swanton have reviewed the conflicting and inadequate evidence,[15] and have been followed in map 1 in the union of Tehueco, Zuaque, Cinaloa, Ahome, Guasave, etc., into the Tehueco group, as one of three main Cáhita units. The several "tribes" may have been political entities, but all spoke Cáhita, and may not have been more distinct than the modern seven "naciones" or towns of the Yaqui, except in the accident of Spanish terminology. The early visitors speak of a single people from the Petatlán (modern Sinaloa) River to the Yaqui.

The Nio and Zoe, who are on the southern margin, lowland and interior, of the Cáhita area, I have, also following Thomas and Swanton, left as separate groups. Here again we have only statements, not vocabularies, and it seems quite possible that they also represented only dialectic variants. The ultimate disposition of their relationships will probably depend on the decision yet to be made concerning the speech of Sinaloa south of the Cáhita, where "Mexican" (Nahua) has usually been shown by the maps, but with reasons for disbelief which are reviewed below in the discussion of the Sinaloa area.

The Orozco and Thomas-Swanton Tepahue area on the lower middle Mayo I have left so designated. The stretch immediately above, from San Bernardo on, is held today by the Huarejía, who speak a dialect about equally distinct from Tarahumar and Cáhita,[16] and who evidently correspond in name, though not so exactly in situation, to Orozco's Varohio or Varogio, who are also mentioned as related to the Tarahumar.[17]

4. *Sonora.* This term is used in the sense of the old province of Sonora, that is, the territory drained by the middle and upper courses of the Mayo, Yaqui, Sonora, Altar, and Gila rivers, and containing two ethnic groups, the Pima and the Opata. The Pima lived in the foothills, the Opata (O′pata) in mountain valleys to or nearly to the crest of the Sierra Madre. While both speak languages of the Sonoran division of Uto-Aztecan, these languages belong to quite different branches of Sonoran. Opata affiliates with Cáhita and Tarahumar, Pima with Tepehuán to the south.[18] The geographic dispersal of these

---

[15] BAE–B 44, esp. pp. 11–17.

[16] Field record by myself at San Bernardo in 1930. See UC–IA no. 8:13, 19, 1934.

[17] Orozco y Berra, 326. His map shows them in the Sierra Madre of Chihuahua in upper Fuerte drainage, which is an error.

[18] This whole area is given rather differently by Sauer in The Distribution of Aboriginal Tribes and Languages in Northwest Mexico, UC–IA no. 5, 1934, with map. As Cáhita proper he recognizes Yaqui, Mayo, and Tehueco, Cinaloa, Zuaque on the Fuerte. On the Sinaloa the Ocoroni and Nio constituted small foreign enclaves. The Mocorito on the river of that name probably belonged with the Tahue of central Sinaloa. The coastal fishing tribes from just south of the mouth of the Mayo to include the mouth of the Culiacán he calls collectively Guasave: they included the Ahome of the Fuerte. These people could not farm their alkaline flats and sand dunes. The Spaniards distinguished them in speech from the Cáhita; Sauer tends to throw Cáhita, Guasave, and Tahue into one closer linguistic subdivision; for which, certainly so far as the Tahue are concerned, there seems to me no warrant (Uto-Aztecan

two branches gives rise to an interesting ethnohistorical problem, the fuller setting and import of which[19] are mentioned below in the section on Mexican areas.

5. *Northern Sierra Madre:* The Tarahumar. The position of this group is uncertain, but chiefly as between the Sonora-Gila-Yuman and the Mexican group of cultures. The Pueblo form of Southwestern culture seems scarcely to be in question in their relations, since the Tarahumar territory lies mainly south of the known range of the Casas Grandes type of Pueblo remains. Judgment on affiliations is rendered difficult by the hybridization of all surviving native Mexican cultures with Spanish culture, plus secondary local differentiations in retention and emphasis of elements. However, there is little reason to believe that the Tarahumar were markedly different from their speech kinsmen the Opata and Cáhita. At any rate, what is known of them shows no striking excess of elements of Central Mexican culture. They are therefore provisionally classed as within the Southwest. The habitat in which they remain is one of deep, hot clefts in a rugged, pine-clad cordilleran mass; but they formerly extended farther east into the lower, open Chihuahua plateau.[20]

6. *Sonora Coast:* The Serian tribes. These people are sharply marked off from their neighbors by being nonagricultural. This fact rests on an environmental limitation, their territory being almost rainless, and at the same time not reached regularly by flow in the rivers which descend into the coastal plain from the Sonoran highland. The next stream south, the Yaqui, does flow to the sea, and is occupied by the farming Cáhita.[21] The question arises

---

Languages of Mexico, UC–IA no. 8:15, 17, 1934). North of the Tahue he includes with them the Comanito of the upper branches of the Mocorito, the Zoe, and the Tubar of the Urique fork of the Fuerte. The Tepahue, Conicari, Macoyahui, and Baciroa, above the Mayo, he affiliates closely with the Cáhita proper. They have at any rate absorbed into the modern Mayo; were probably not very different in speech; but, as inhabitants of streams flowing through hill country, were presumably distinct from the bottom-land Mayo culturally and nationally. Above these, he unites into another group the Varohío, Chínipa, Guasapar, and probably Témori in the canyon country of the Mayo and the Otero branch of the Fuerte; with the Chínipa culturally dominant. They were later displaced or assimilated by the Tarahumar. The Huite on the Fuerte between the Tubar and the Cinaloa are unplaced. In brief, the Cáhita, on the regularly flooded bottom lands of the lower Yaqui, Mayo, and Fuerte, were the distinctive people of the area. On the Sinaloa, and above the Cáhita on the three larger rivers, but below the high Sierra Madre, were a dozen or more territorially smaller nations on whose speech and affiliations we have various Spanish statements, but no specimens, and who have become extinct or submerged; with the exception of the Huarojío-Varohío, whose surviving language is of the Cáhita-Tarahumar-Opata group of Sonoran Uto-Aztecan but neither Cáhita nor Tarahumar. Finally, there were the coastal Ahome-Guasave, whose subsistence relation to the Cáhita must have been much like that of the Seri to the Pima, though there is nothing to indicate that they were non-Sonoran.

Sauer has been repeatedly on the ground, as Orozco, Thomas, and Swanton have not. He has also adduced new documentary sources. However revolutionary his conclusions at times, they are therefore always entitled to most serious consideration.

[19] Discussed in Sauer's and my papers in UC–IA just cited. See also the next footnote for Pima, Opata, and Cáhita cultural relations.

[20] W. C. Bennett and R. M. Zingg have published an excellent modern monograph, The Tarahumara (Univ. Chicago, 1935), based on field residence. Their analysis of the culture makes it non-Pueblo, "Sonoran" or Northwest Mexican, built up on a Basket Maker-like foundation. Ceremonially its relations seem mostly with the South; otherwise, similarities are marked also with Cáhita, Opata, and Pima. This is an important study, in detail and conclusions. Bennett and Zingg also (p. 392) modify Beals's and my culture grouping: the Opata are classed with the Cáhita, not with the Pima. This accords with speech; but Zingg's manuscript trait lists will have to be published before the evidence can be judged.

[21] There is also somewhat more rain in the lower Yaqui area.

whether the Seri group of tribes represent a populational remnant from preagricultural times, a former farming people which was pushed into the area and perforce gave up farming, or a nonfarming element that came in to occupy the coastal desert which was worthless to the surrounding agricultural tribes. The last of these possibilities is favored by their situation on the narrowest part of the Gulf of California and by the fact that the peninsular tribes across the Gulf were also nonfarming. In terms of mere geography, therefore, a derivation of the Seri from peninsular California would be the simplest explanation of the gross facts. Actually, the evidence is not in hand to settle the question. I have discussed the pertinent available data elsewhere;[22] and will only add here that there seems to be little to substantiate McGee's view of extreme uniqueness of the Seri. They certainly resembled the peninsular Californians greatly in level of culture, and appear to show numerous specific resemblances in culture content to the Sonora and northwestern Arizona areas.

This area, then, may or may not have to be classed ultimately with the Peninsular Californian one.

7. *Northwest Arizona:* Yavapai, Walapai, Havasupai. These three tribes are closely similar in speech, forming a distinct subgroup of the Yuman family, with closest affiliations, apparently, with the Akwa'ala-Paipai of northern peninsular California. The Walapai consist of seven subtribes or bands.[23] The Yavapai, according to Gifford,[24] comprise three divisions of at least near-tribal rank: western, southeastern, northeastern. These are again divided into localized bands, of which 2, 2, 6 respectively are enumerated. These Yavapai "bands" evidently correspond to the Walapai "subtribes." The Havasupai look like a Walapai band or subtribe which has acquired somewhat greater ethnic, cultural, and historic independence.

All three tribes farmed where they could. This, however, they did sporadically and insignificantly, the Havasupai excepted. Even the Havasupai lived half the year out of the canyon in which they farmed, and their life during this winter half was scarcely distinguishable from that of the Walapai and Yavapai. The culture shows many resemblances to that of Peninsular California (including the Diegueño) as well as to that of the Great Basin Shoshoneans, especially the Southern Paiute across the great chasm of the Colorado. There are also a good many specific resemblances to the Seri. We have in this group, then, a culture related primarily to the nonfarming desert cultures of the region. Upon this basis there have been built superficial local differentiations: Havasupai semisystematic agriculture and use of a few masks adopted from the Hopi, for instance; matrilinear sibs which the Southeastern Yavapai share with the Apache; Mohave song cycles and mourning rites taken over in the American period by the Walapai. In each of these, the influence of the import remains local, and appears to be rather recent. Spier,[25] even before the Walapai and Yavapai data became available, neatly analyzed Havasupai culture much along these lines, pointing out the essential smallness and overlay quality of the Pueblo ingredient, and aligning the culture primarily with that of the Great Basin.

---

[22] The Seri, Southwest Museum Papers, no. 6, 1931.

[23] Walapai Ethnography (Contrib. Lab. Anthr., 1), AAA–M 42, 1935.

[24] Gifford, The Southeastern Yavapai, UC–PAAE 29:177–252, 1932; Northeastern and Western Yavapai, UC–PAAE 34:247–354, 1936.

[25] AA 31:213–222, 1929.

The resemblance of Northwest Arizona to Great Basin culture lies not only in considerable specific content, but especially in similar meagerness of defined patterns.

In land form, the Northwest Arizona area is not a unit. The line between the Basin-and-Range and Colorado Plateaus areas strikes diagonally through Walapai and Yavapai territory. Almost coincident is the line that separates the vegetational areas of creosote bush and juniper-piñon. However, the larger half of the habitat seems to lie in Basin-and-Range and creosote bush, and the smaller remainder lies mostly on the lower levels of the Plateau where the juniper struggles near its lower limits. The environmental fit of the fact that the area belongs in the Sonora-Gila-Yuma half of the cultural Southwest is therefore closer than the sharp lines on the map would indicate.

8. *Lower Colorado River:* The "river Yuman" tribes; in order upstream, the Cocopa, Halyikwamai, Kohuana, Yuma, Halchidhoma, Mohave; plus the Maricopa on the Gila. The first three belong to one dialect group of Yuman, the last four to another. The Maricopa have been on the Gila since before 1700. The Halyikwamai, Kohuana, and Halchidhoma took refuge with the Maricopa during the nineteenth century and have lost their tribal identity among them.[26]

The river culture is specialized from that of the Yuman tribes in the desert and mountains on both sides. It is characterized by consequential agriculture depending wholly on river bottom-land flooding, not at all on rains or artificial irrigation; by pottery which is a direct descendant of the prehistoric red-on-buff ware of the Middle Gila; by a lack of interest in many aspects of material culture and resulting degeneration, as in basketry; and by a religion which largely suppressed visible ritual and symbolism and substituted emphasis on song acquired by quasi-shamanistic dreaming, or pseudo dreaming, within a highly conventionalized mythological pattern. As Herzog has pointed out, the river Yuman music also follows a highly specialized style.[27]

---

[26] Spier, Yuman Tribes of the Gila River (Univ. Chicago, 1933), has clarified the picture, especially for the river Yumans off the Colorado. His identification of a new tribe, the Kavelchadhom, brings the number of Yuman tribes and tribal remnants on the Gila up to five, instead of the Maricopa alone, as long assumed. These are: (1) Maricopa, between the Salt River and Gila Bend in the eighteenth century, and perhaps off the Colorado already in Alarcón's time, 1540; (2) Kavelchadhom, perhaps a Halchidhoma subtribe and at any rate identical in speech; on the Gila from 30 to 50 miles below Gila Bend in the eighteenth century; joined the Maricopa between 1838 and 1852; (3) Halchidhoma, joined 1833–1838; (4) Kohuana, and (5) Halyikwamai, joined 1838–1839. After about 1800, and therefore when the four other tribes merged among them, the Maricopa were living above instead of below the mouth of the Salt. In short, at the opening of the historic record there were at least six Yuman tribes on the Colorado, two on the Gila (and these evidently recently from the larger stream). In 1840 there were three on the Colorado, five merged remnants on the Gila. Obviously, the Colorado was the breeding ground, from which the losers in war were expelled, following the Maricopa lead up the tributary. Speech classification, on the basis of my own vocabularies: Maricopa, Kavelchadhom, Halchidhoma are very close, and similar also to Yuma, somewhat less so to Mohave. Kohuana and Halyikwamai, however, are essentially Cocopa dialects, and Cocopa differs thoroughly from Maricopa-Yuma-Mohave, showing definite Akwa'ala-Diegueño resemblances instead.

Certain specific traits are shared by the river Yumans and the Gila Pima. I have listed these elsewhere.[28] Some of the common traits are almost certainly the result of interchange within Arizona, and most may prove to be so; but others may extend through the various Pima groups of Sonora. This problem, and the involved one of the relation of river Yuman to "Sonoran" (Pima-Opata) culture, depend for solution on fuller knowledge of the Pima in Mexico. On the whole, river Yuman culture gives the impression of being more specialized than Piman, though quite likely no fuller in content; and therefore of being largely due to a development on the spot.

The Shoshonean Chemehuevi have been considerably influenced by the Mohave on the side of religion, but apparently without appreciable effect on their economic life. It is not clear whether or how far this influence antedates the Caucasian period. It may well be that the somewhat hazy distinction between the Chemehuevi and the other Southern Paiute rests essentially on this influence; in other words, that the term Chemehuevi denotes those Southern Paiute who have been affected by the Mohave.[29]

9. *Peninsular California.* This area comprises all the groups of the peninsula and somewhat beyond northward, namely, Pericú, Waicura and subdivisions, all the Cochimí, Akwa'ala[30] or Paipai, Kiliwa or Kilyuwa,[31] Diegueño, and

---

[27] The Yuman Musical Style, JAFL 41:183–231, 1928.

[28] The Seri, Southwest Museum Papers, no. 6:44–47, 1931.

Spier, Cultural Relations of the Gila River and Lower Colorado Tribes, YU–PA no. 3, 1936, gives a much longer list of traits. He affiliates river Yuman with Gila Pima and Arizona Papago culture, as against that of the Yumans and Athabascans of the "Arizona Plateau." This position seems sound for the United States; but it is incomplete through ignoring the long range of the Pima in Sonora, and the fact that the river Yumans and Cáhita seem to have shared much more than flood bottom-land agriculture: for instance, simple technology, loose organization, meagerness of rituals, warlikeness, and unrest. Gifford, AA 38:679–682, 1936, takes issue with Spier concerning the closeness of river Yuman and Gila Piman culture. The difference of opinion seems to be one of taxonomic preference; they agree that the Maricopa relate culturally to the Colorado Yumans more than to the Gila Pima. Underlying Spier's alignment of the Arizona Plateau Yumans with the Apache and Basin Shoshoneans, as against the river Yumans and Pima, seems to be the consideration that the former do not and the latter do farm regularly; and underlying this, in turn, is of course the ecology of the two regions. The question is, Have we here two "cultures," or two facies extending through a series of cultures? Descriptively, Spier may be right; though then the Seri, Diegueño, and Cochimí should presumably be included in his first group, the Cáhita and others in the second. Historically it may be questioned whether the culture development was so simple that it can be resolved into two streams differing essentially according as habitat forbade or allowed farming, important though this factor was.

[29] Isabel Kelly, AA 36:548–560, 1934, distinguishes fifteen Southern Paiute bands. Much the largest of these territorially is no. 14, the Las Vegas band, west of the Colorado from where this turns to flow south. From out of this band the "Chemehuevi" (band no. 15) pushed south to about 33½° north latitude before 1850. "Chemehuevi" refers to the group called Chemehuevi by the Americans; the Mohave, and following them Spanish authors like Garcés, call all Southern Paiute known to them Chemehuevi, at least as far northeast as the Moapa (no. 13) and Shivwits (no. 6).

[30] Gifford and Lowie, UC–PAAE 23:339–352, 1928. Drucker has obtained an Akwa'ala and a Mexican Diegueño element list, which will be published in the Culture Element Distributions series in UC–AR.

[31] Peveril Meigs, 3d, The Kiliwa Indians of Lower California, UC–IA no. 15, 1939.

Kamia; possibly also the Seri, as discussed under Sonora Coast, and fragments of river Yuman tribes extruded into the desert. All, except in a measure the Kamia, were almost perforce nonagricultural; but the northern groups made simple buff-red pottery. Pitahaya and other cactus fruit, and locally agave, were the only abundant food supply, and that mainly seasonal. Alongshore, fish and mollusks must have been important. Subsistence through most of the desert peninsula was meager, and the population was compelled to remain scattered, even after mission reduction. In the north, from the San Pedro Mártir massif to the Cuyamacas, altitude and fog allowed some amelioration of food conditions; and the same holds in the extreme south, about Cape San Lucas, where the maps show a subhumid vegetation. The scant accounts of the Pericú at the southern tip, however, do not seem to differentiate them culturally much from the Waicura and Cochimí of the body of the peninsula. In the north, the level of the culture seems to have been raised more than the type was changed. Certain religious features of the Diegueño, such as the Chungichnish Datura cult, which they share with the Shoshoneans of southern American California, are at least in part, and probably mainly, post-Caucasian imports.[32] Kamia agriculture and other river Yuman resemblances also look like rather recent additions to an eastern Diegueño basis of culture.[33]

10. *Southern California:* Shoshoneans and Chumash south of the Tehachapi. The Diegueño probably belong rather to the peninsula. The Southern California area is nonagricultural throughout, and ceramic only at its southeastern margin. The subsistence basis is Californian, many of the elements of culture Southwestern. Some of these, like the sand-painting altar, are of Pueblo rather than Sonora-Yuma type, and may be the result of ancient radiations from the former people across the territory of the latter. There is a definite climax in this area among coast and island Gabrielino and Chumash, whose culture was semimaritime, with seagoing plank canoes. Although this climax culture was likely to have been further developed locally once it had taken root on the Santa Barbara Islands, its spontaneous origin on the mainland coast and growth to the point where it could reach the islands are hard to understand on the basis of either a Californian or a Sonora-Yuman culture basis. There is therefore a possibility that its impetus came in part either from the Northwest Coast or from across the Pacific, to both of which regions there are sporadic but fairly specific parallels: harpoon, canoe, round shell fishhooks, psychological cosmogony. The double-bladed paddle and spear thrower of the area might possibly be construed as taken over from Aleuts imported by Russian sea-otter hunters in the course of the Mission period; but the abundant archaeological evidence shows that this puzzling local climax culture as

---

[32] Waterman, Religious Practices of the Diegueño Indians, UC-PAAE 8:271–358, 1910. These features are found chiefly among the Diegueño of the coast and mountains, not of the desert side of the mountains.

[33] Gifford, The Kamia of Imperial Valley, BAE-B 97, 1931; esp. pp. 1–3, 83–86.

Philip Drucker, who in 1935 visited the southern California tribes for an element survey, looks upon Diegueño territory as extending east to the Yuma, and the "Kamia" as those families or lineages of the Desert Diegueño who from time to time went to live among the Yuma. See Drucker, CED:V—Southern California, AR 1, no. 1, 1937.

a whole far antedates any Caucasian contacts. Of late, archaeological data have at last begun to throw a little light on part of its development.[34]

### HISTORY

The prehistory of the Pueblo culture, attacked for a long time with little conception of historic problem and less of method, was finally synthesized by Kidder,[35] and accords well with the close ecological relationship of the Pueblo and Great Basin areas. Pueblo culture grew by continuous transitions out of a Basket Maker culture similar to that of the ancient and modern Basin, but incipiently agricultural though still potteryless. Most of the Basket Maker remains have to date been found in the northwestern part of the main range of historic Pueblo sites, toward its Colorado drainage and Great Basin side. Pueblo culture itself, in an early period, spread temporarily into the Basin cultural area[36] through parts of Utah and southern Nevada.[37] These relations are discussed again in connection with the Great Basin. Coincident with the recession from this northwesterly spread of Pueblo culture came a concentration into large towns and a flowering of the culture; and, more or less associated with this, the Puebloid development of Casas Grandes in northern Chihuahua. Thereafter, Pueblo culture contracted in range; and it varied or specialized, rather than grew, in its forms and content. This process continued through the historic period, in which there also occurred an assimilation of Caucasian culture, most obvious in economics and technology, but far from negligible on the nonmaterial side.

In summary, the sagebrush-juniper area did once harbor a relatively uniform culture, but after this began to differentiate into cultures of Great Basin and Pueblo type, the latter shrank back into a limited portion of the area and has been tenaciously on the defensive since. It is notorious that the Pueblos are nonpropagandist and that their exceptionally high culture has left little specific impress upon others.

---

[34] Olson, Chumash Prehistory, UC–PAAE 28:1–21, 1930 (stratigraphic, two periods, plus a transition); David Rogers, Prehistoric Man of the Santa Barbara Coast (Santa Barbara, 1929) (three successive cultures). The documentation for Rogers' distinctive middle period is insufficient. Olson finds rude metates (plus some mortars) and charmstones characteristic of his earlier period; mortars, circular fishhooks, and perhaps perforated stones, of the later. The earliest deposits yet discovered on the Chumash islands are similar in type to the transitional rather than to the characteristic early remains of the mainland. Two recent papers by R. F. Heizer are important: on the spear thrower in American Antiquity, 4:137–141, 1938, and on the plank canoe in Ethnological Studies (Göteborg), 7:193–227, 1938.

[35] Southwestern Archaeology, 1924.

[36] Even to the Mohave Sink region of southern California, according to M. J. Rogers, San Diego Museum, Archaeology, 1:1–13, 1929.

[37] It is doubtful how far the "Pueblo" culture north and west of the Colorado may not be Puebloid rather than true Pueblo. It contains genuine Pueblo traits, but lacks others, and possesses specific non-Pueblo features. The approach has been from the side of knowledge of the classical Pueblos, with a natural tendency to construe as Pueblo any culture which still showed definite Pueblo elements. Had the approach been from another side, it is conceivable that these northwestern cultures would have been described as non-Pueblo with a greater or less degree of Pueblo influencing. Noel Morss, in the Summary of his recent Ancient Culture of the Fremont River in [South Central] Utah, PM–P 12, no. 3, 1931, shows this rather clearly: Pueblo maize and pottery present; Pueblo masonry, kivas, cotton, turkey, plaited (twilled) basketry absent; non-Pueblo cists, moccasins, fur cloth, coiled basketry, snares, figurines, anthropomorphic pictographs well developed or abundant. On a broad view, does such a culture deserve to be called Pueblo?

J. H. Steward, Archaeological Problems of the Northern Periphery of the Southwest, Mus. of Northern Ariz. Bull. no. 5, Flagstaff, 1933, makes such Southwest culture as entered Utah mainly Basket Maker 3–Pueblo 1. The Northern Periphery mainly or wholly lacked the grooved ax, turkey, cotton, sandals, and a whole series of Pueblo pottery forms and decoration techniques. Steward maps four areas (five with 1A, 1B) of this Northern Pueblo Periphery in and about Utah.

The question arises, What was it that caused the differentiation of incipient Pueblo culture from the Basket Maker-Great Basin basis? On the one hand, gradual development of pottery, masonry, and community towns on the spot has been followed out in such detail by Morris, Prudden, and others, as to give a strong impression of a spontaneous, purely local growth.[38] On the other hand, there are a series of facts pointing to irradiations from the south. Maize, of flint variety, and squash, both almost surely of Mexican origin, appear in Basket Maker period 2, pottery in period 3; slab construction with masonry augmentation arises in Pueblo period 1; communal houses or small towns of masonry, in Pueblo period 2.[39] These successive appearances lend themselves to the interpretation of continuing or repeated influences from the south which gradually became effective in crystallizing what we know as Pueblo culture. A special injection is likely to have occurred at the beginning of Pueblo period 1, when a broad-headed population, which has persisted, began to replace the long-headed Basket Makers, whose head type continues among the recent Basin Shoshoneans. In any event, the explanation of a foreign southern origin of the stimulus or ferment of Pueblo culture also helps to explain the anomaly of two quite different culture types—Pueblo and Basin—within the same natural area.

Why, however, these have persisted side by side for at least a thousand and perhaps two thousand years without assimilation or without the replacing of one by the other has not been altogether clear. One is inclined to look for the cause as lying in something in the character of Pueblo culture itself, in those factors which early gave it its exceptionally nonexpansive, self-centered quality. These factors in turn seem to be two: one cultural, the other natural. The cultural element is no doubt the relatively high degree to which Pueblo culture even in early times already had its basis in farming subsistence. On account of the habitus of maize, this necessarily means an ultimate southern origin; though whether the importation was due more to diffusion of the art of agriculture or to populational movements, we cannot at present say. The natural factor is the limitation which climate puts upon maize growing. This is illustrated in maps 25 and 26, and discussed further in Section XIII, under "Climate." In essence, it appears, Pueblo agriculture, and therefore the Pueblo type of culture, were prevented from spreading westward either by downright aridity or, where there was enough rainfall, by the concentration of this into winter; northward, by decreasing temperature expressed specifically in too short a growing season for maize to mature between the last frosts of spring and the first of fall.[40] Where the Pueblos live today, they can depend on corn with reasonable safety though with little margin. Parts of the areas which they once occupied are also farmable for them; but others, like most of their former holdings in Utah and Nevada, must have afforded an extremely precarious subsistence at best. In short, sagebrush and juniper thrive about equally well in the Basin and in the Pueblo country; maize does not, even with the most careful nursing. Natural vegetation is not an index of the determining factors of a culture like that of the Pueblo. The Pueblo culture did push its southern-derived subsistence basis, which was integral to its nature, as far north as was possible; at times beyond the limits of success. In its basis, it was and remained definitely a marginal culture. The wonder is that upon this marginal basis it succeeded in erecting so rich a social and religious superstructure of climax growth.

---

[38] Bibliography in Kidder, Southwestern Archaeology.

[39] Kidder, 118–135; also Science, 66:489–491, 1927; Roberts, BAE–B 92:2–7, 1929, 100: 2–5, 1931, 111:2–27, 1932; Kidder, pt. 3, Discussion, pp. 589 ff. of Kidder and Shepard, The Pottery of Pecos, vol. 2, 1936.

[40] Toward the east, a limiting climatic factor is not clear.

Besides the early and rather meager flow into Utah and Nevada, and perhaps some sporadic efforts to penetrate the Plains, only one notable Pueblo expansion is yet authenticated: that which brought polychrome pottery into the Middle Gila region of the Sonora-Yuman area during the Great and Late periods (Pueblo periods 3 and 4). Here the Pueblo invasion found red-on-buff bichrome ceramics established, continued alongside them for a while, but retreated or died out again before the historic period, leaving red-on-buff somewhat altered but in possession of the field.[41] In the local history of the Gila region, this Pueblo or Puebloid invasion was no doubt a momentous event. But its transience evidences the firmness with which the Sonora-Gila-Yuman area held its line against the Pueblo. Reciprocally, the eastern limit of red-on-buff ware about Solomonsville corresponds closely with the boundary of the creosote bush or succulent desert (maps 3, 4, 5). The Verde drainage, again, is mostly juniper, and its pottery, except near the mouth of the Verde, is Pueblo.

Kidder suggests the prehistoric Casas Grandes River culture as a Pueblo proliferation in period 3 (or 4); but so little is known of this old north Chihuahuan culture—and nothing beyond it—that it might conceivably prove to be the result of the impingement on Pueblo culture of northward radiations of some Mexican development. Its pottery is well differentiated from all other local Pueblo styles; its architecture, from all but that of the Mimbres and Gila.[42]

In the historic period, Pueblo contacts with the Plains were largely through the uppermost group on the Rio Grande, the Tiwa, where Taos shows much Plains influence. It is significant that the nearer Plains tribes—Comanche, Kiowa, Southern Arapaho, and Cheyenne—show very few Pueblo traits. The

---

[41] E. F. Schmidt, Proc. Nat. Acad. Sci., 13:291–298, 1927; AMNH–AP 30:247–302, 1928; H. S. Gladwin, Southwest Museum Papers, no. 2, 1928; the same (no author given, privately printed for the Medallion, Pasadena, later, Gila Pueblo, Globe), 1–72, 1929, 135–161, no date; Kroeber, review of first and third, AA 31:513–516, 1929; F. M. Hawley, AA 32:522–536, 1930; Sauer and Brand, UC–PG 3:415–448, 1930.

Excavations at Snaketown, Medallion Papers, nos. 25, 26, 1937, by H. S. Gladwin, E. W. Haury, E. B. Sayles, N. Gladwin (with full bibliog.), summarizes knowledge of Hohokam culture and shows how much has been learned since the foregoing citations were written.

[42] H. A. Carey, An Analysis of Northwestern Chihuahuan Culture, AA 33:325–374, 1931, points out Mexican resemblances, but aligns the culture primarily within the Southwest. See also D. D. Brand, The Distribution of Pottery Types in Northwest Mexico, AA 37:287–305, 1935.

Jicarilla and Mescalero Apache are Southwestern, by general estimation, but with a non-Pueblo basis of life—open plainsmen and buffalo hunters. This does not mean that they were Plains tribes in the nineteenth-century sense, but more likely that they were dwellers at the foot of the Rockies and southern ranges who roamed into the plains—members of a contingent of which a part later went into the making of the Plains tribes as we know them. The Kiowa-Apache would be a band that finally stayed in the plains. Somewhat similarly, the Kiowa, on the basis of their speech, apparently are a group that anciently broke away from the Tanoans of the Rio Grande—somewhat like the Comanche from the Shoshone much later on. These movements illustrate the greater vigor of late Plains over that of Southwestern culture.

# VIII. CULTURE AREAS: INTERMEDIATE AND INTERMOUNTAIN AREAS

## 1. GREAT BASIN

CALIFORNIA has generally been reckoned a distinct area ever since American culture began to be classified geographically; but the Great Basin[1] has been bandied about. It has frequently been included with the interior Columbia and Fraser drainages in a "Plateau area," the concept of which before long came to be unduly colored by the culture of the Fraser Salish, the only tribes then intensively monographed. Otis Mason recognized a separate Interior Basin. Wissler united the Basin with California into a Wild Seed area in his food-area classification. This is undoubtedly correct so far as subsistence is concerned, and was followed by myself when I constituted a California-Great Basin area of general culture.[2] In his culture-area classification, however, Wissler departs from this solid basis and dissolves the Basin away, assigning its territory to the adjacent Southwest, California, Plateau, and Plains, most largely to the last named. His schematic boundaries diminish the arbitrariness of this division, which would appear starkly on a map following physiographic or tribal features. No one seems ever to have doubted the close internal cultural unity of the Shoshonean Basin tribes. It is the meagerness of their culture on levels above that of mere subsistence which has made it difficult to specify their affinities.

The union of the Basin with the Columbia-Fraser drainage into a Plateau area seems to rest on the recognition of a negative fact: the absence of nearly all the more intensive culture manifestations of the coast on one side and of the plains on the other. This, however, still leaves the Columbia-Fraser a hinterland to the Northwest Coast, the Basin to California. Also, food habits are built respectively about salmon taking and bulb digging and about seed gathering. The positive similarities of the Basin and Columbia-Fraser areas appear to be rather few. Their relationship is one of level or saturation stage rather than of specific content. Their union into a larger Plateau area therefore leads to little opportunity for historic utilization.

Wissler's inclusion of all the easterly Basin tribes in the Plains area has validity for the last century or so, but would misrepresent earlier conditions. It is true that, viewed against the Teton and Blackfoot, the recent Ute and Bannock cultures look like peripherally diminished Plains cultures. However, this interpretation ignores the recency of the Plains culture represented in our museum collections and in many modern monographs; and it also sees the Plains focus in the far western plains, where relations with the eastern Basin would be strongest. The view here developed is that the eastern Basin and

---

[1] In the Great Basin there is here included the part of the Colorado River drainage which lies outside the Southwest area. The plant cover is the same, though high mountain masses with pine forests are somewhat more extensive in the upper Colorado drainage than in the Basin proper. "Great Basin-Upper Colorado" would therefore be the more exactly descriptive term; but it is cumbersome and not wholly accurate, since the Little Colorado and San Juan affluents of the Colorado belong in the Pueblo Southwest area.

[2] UC-PAAE 17:151–169, 1920. See also Lowie, UC-PAAE 20:145–156, 1923.

Rocky Mountains areas indeed had pre-Caucasian relations with the western Plains, but as influencing perhaps more than influenced. This point will be referred to more fully when the Plains culture is discussed.

As for the relation to California, it is clear that the basic subsistence type of the Basin is similar, and that there are also close relationships in basketry and dwellings. It is to be noted, however, that climate and, in the main, vegetation change sharply as soon as the Sierra Nevada is crossed; and in both these matters the Basin and most of the Southwest belong together, as all the maps show. Some presumption is therefore at once raised that the Basin belongs with the Southwest in culture also. This connection has been disguised by the hitherto prevalent habit of thinking of the Southwest in terms of its specialized Pueblo phase. As a matter of fact there is a large amount of evidence pointing to close relations of Southwest and Basin. The first Basket Maker discoveries were recognized as showing Californian similarities. In the standardized Southwestern scheme of horizons, the hypothetical, preagricultural stage, Basket Maker 1, is formulated[3] as a seed-gathering, basket-using culture of general Basin-like type. The Lovelock Cave of central Nevada, in the heart of the Great Basin, yields in its lowest stratum an atlatl culture which M. R. Harrington reckons as akin to Basket Maker.[4] The upper strata are on the whole more similar to recent California. Early Pueblo culture has been traced by Judd northward in western Utah to the Idaho line, and by Harrington westward across southern Nevada to the California boundary.[5] This means that before Pueblo culture attained its full specialization it actually held a large part of the Basin. As specialization increased, territorial contraction took place, and tribes of Basin type of culture flowed back into the vacated area. Reciprocal relations must, however, have been fairly active. Spier's study of the Havasupai,[6] the first monograph on a non-Pueblo tribe in the general Pueblo range (except for the Navaho, who are Puebloized superficially), reveals a culture far more Basin than Pueblo in general habitus. The same is even clearer for the Walapai.

In spite, then, of the striking differences between cultures like those of the modern Paiutes and Pueblos, their remote antecedents were closely similar if not substantially common, in a common environment mainly of sagebrush-juniper semidesert. Within the environment, the boundary between Basin and Pueblo culture has fluctuated, and that between Basin and sub-Pueblo has always remained ill defined.

In the light of this, the relation of California to the Basin, which cannot be denied, is best viewed as resting on an early kinship of Californian and primitive Basin-Southwest cultures. In part, influences flowed from the latter into California, resulting in growths like that of Yokuts-Mono pottery.[7] In part, perhaps, reciprocal influences flowed from California into the Basin, as specific Pueblo influences retracted there. In the main, however, the California and Basin cultures are alike because they have not risen very far above their early, closely related forms. Where there has been such rise or divergence, as in the Californian climax area, none of the secondary or specialized manifestations—Kuksu cult, Pomo basketry—has crossed the Sierra Nevada, even in fragments. The Great Basin is a hinterland to California as the Columbia-Fraser drainage is to the Northwest Coast, in the sense that both have tended to preserve an early phase of culture which has advanced to specialization in the coastal areas. The Basin is not a hinterland to California in the full sense that Columbia-Fraser is to the Northwest, because it has not been influenced by the coastal culture to the same degree.

---

[3] Kidder, Science, 66:489–491, 1927.

[4] UC–PAAE 25:1–183, 1929. Significant affinities must not be stretched into an identification. The Lovelock culture is *not* classical Arizona-New Mexico Basket Maker culture.

[5] Judd, bibliography 1917–1920 as cited in Kidder, Southwestern Archaeology; M. R. Harrington, AA, 29:262–277, 1927; MAIHF–IN 5:235–240, 1928 (map).

[6] AMNH–AP 29:81–392, 1928; also AA 31:213–222, 1929.

[7] UC–PAAE 23:382, 1928; Gayton, UC–PAAE 24:239–255, 1929.

The position of the Bannock and the Lemhi Shoshone is not clear. They live in Snake and therefore Columbia[8] drainage, but in an area of sagebrush-juniper plant cover, except for pine in the higher Salmon River Mountains (map 4). They subsist to some degree on salmon, but their speech is that of the Great Basin. They are here tentatively classified contrary to physiography, and according to their ecological and linguistic relations, as constituting a Basin subarea.

Another subarea is that of the Klamath-Modoc and Achomawi-Atsugewi, who live in Northwest Coast and Californian drainage, but seem largely Great Basin in culture. This classification of them is given a certain historic depth by the occurrence, in the Lovelock Cave deposits of central Nevada, of flexible twined basketry of modern Klamath-Achomawi type in the lowest or atlatl-bearing strata.[9] The nineteenth century brought into the Klamath Lakes region an importation of Columbia and Plains traits. These came from the north, by way of the Deschutes River, and represent an extension of Plains culture in its final exuberant horse phase. Achomawi territory is partly sagebrush-juniper, partly pine; Klamath, pine forest surrounding a characterizing area of marsh (map 4). Both territories lie high,[10] at about 4000 feet elevation, and while they have nearly complete sea drainage, they are situated inland of the Sierra-Cascades axis, which here is somewhat broken down. Physiographically, both territories are reckoned as in the Basin, that is, Basin-and-Range province (map 7); and climatically they are cool and still within humid limits (map 24). The Achomawi-Atsugewi subtribes segregate into an eastern and a western division, which C. Hart Merriam[11] and Kniffen[12] have shown to differ somewhat in culture, as well as in the plant cover of their habitats. The westernmost Achomawi group, the Madesi,[13] seem to belong culturally with their neighbors, the Wintu, who are clearly Californian. The Northeastern or Mountain Maidu should perhaps be classed in the Klamath Lakes-Pit River area. Theirs is also a 4000-foot habitat, as compared with sea level to 3000 feet for the other Maidu. Culturally they agree at many points with the Achomawi, as in their basketry and lack of ritual organization. The Mountain Maidu as well as western Achomawi-Atsugewi can probably be included with about equal justice in the California and the Great Basin cultures. I reckon them here with the Great Basin in order to draw attention to their status, and to break down the tradition, to which I have myself contributed, that because they live in the state of California they are to be assumed as Californian culturally.

---

[8] Boas, works cited in Tribal Map bibliography (p. 9 above), 1927, 1928, has only the Bannock in Snake drainage before 1800, all the Shoshone in this latitude being west of the continental watershed. This seems very doubtful.

[9] UC–PAAE 25:26, 1929.

[10] L. Spier, Klamath Ethnography, UC–PAAE 30, 1930.

[11] Classification and Distribution of Pit River Indian Tribes, SI–MC 78, no. 3, 1926 (publ. 2874).

[12] Achomawi Geography, UC–PAAE 23:297–332, 1928.

[13] C. Hart Merriam, An-nik-a-del, 1928.

Separated by the southerly Sierra Nevada are the Western and Eastern Mono, locally known as Mono and Paiute respectively. The former, at least about the Kings and Kaweah rivers, are culturally almost indistinguishable from the hill Yokuts, and therefore Californian.[14] The latter, according to studies undertaken by J. H. Steward, promise to show a number of Californian traits. Their habitat, however, and presumably their communications and outlook, are in the Basin; and they are here included in that area.[15]

Farther south, the Chemehuevi, who essentially are only the westernmost bands of the true or Southern Paiute, have come under some influence of the Lower Colorado culture; as have the Paiute of the Virgin-Muddy drainage: song cycles, mourning, a little agriculture and pottery, though the last seems more likely to be a Pueblo inheritance.[16] The subsistence habits and manner of life, however, continue to be Basin Shoshonean.[17]

On the east, tribes like the Ute and Shoshone are of Basin affiliations with a late Plains overlay, as discussed below. Even the Wind River Shoshone, across the divide in Missouri drainage, can best be included in Basin culture. Their nineteenth-century habitat was one of sagebrush.

---

[14] A. H. Gayton, UC–PAAE 24:239–255, 1929; 24:361–420, 1930; 28:57–82, 1930. The Mono of the north fork of the San Joaquin differ appreciably from the adjacent Yokuts and Miwok; see Gifford, UC–PAAE 31:15–65, 1932.

[15] Steward's study has now appeared: Ethnography of the Owens Valley Paiute, UC–PAAE 33:233–350, 1933. It shows these "Eastern Mono" (he declares the term a misnomer in spite of the fact that Mono Lake is east of the Sierra) to have a Basin rather than Californian culture. This is confirmed by element surveys by himself and H. E. Driver comparing the Owens Valley Northern Paiute with the tribes east and west respectively. Steward has also rendered a long-needed service in determining the territorial bands of the Shoshone, and O. Stewart those of the Northern Paiute: see the supplemental bibliography in Sec. III, "Tribal Areas" (including briefer articles listed under "Ray, Park, and others"). These works, with Kelly's (see note 17, below), at last give a reasonably accurate picture of the many small groups that constitute the Great Basin Shoshoneans.

[16] Gifford, UC–PAAE 23:372, 1928.

[17] Kelly, AA 36:548–560, 1934, groups the Southern Paiute-Chemehuevi into fifteen territorial bands: San Juan (this band is the only one south of the Colorado), Kaiparowits, Panguitch, Kaibab, Uinkarets, Shivwits, St. George, Gunlock, Cedar, Beaver, Panaca, Paranigat, Moapa, Las Vegas, Chemehuevi. These are evidently small tribes, with territories averaging in area not far from 2000 square miles. However, Las Vegas with its historic Chemehuevi offshoot is disproportionately large: one-fourth of the total Southern Paiute area. Of the fifteen bands, eight agree with the Powell-Ingalls list (Hdbk. Am. Inds. 2:188), three are new, four cover the same area as twenty-three of Powell's (Kaibab two, Cedar three, Moapa seven, Las Vegas eleven), which accordingly represent subdivisions or mere localities.

Drucker's 1935 element survey unites the Chemehuevi strongly with the Yuma in culture as against a Serrano-Cahuilla-Luiseño-Diegueño unit farther west.

In short, about three marginal subareas are more or less authenticable for the Basin besides its main area:

1a. The cultural Basin area proper.

1b. The Bannock and Shoshone of the Snake-Salmon drainage.

1c. The non-Shoshonean tribes of the Klamath Lakes and Pit River.

1d. The eastern border tribes recently influenced by those of the Plains, especially the Wind River Shoshone across the Rockies.

All the tribes of the area are Shoshonean except those of subarea "c" and the Washo on the western border of "1a."

### 2. CALIFORNIA

Otis T. Mason made his California area include Oregon. Wissler makes it coterminous with California, except for excluding the southeastern corner of the state and including western Nevada. My classification gives southern California to the Southwest, the northwestern corner to the Northwest Coast, the northeastern, as just discussed, to the Great Basin, the eastern or trans-Sierra fringe also to the Basin. This leaves to the California area only the region which in earlier classifications, made with a local rather than continental view, I called Central California.[18] Essentially, this area consists of the Great (or Interior) Valley of California with the Coast Ranges and Sierra Nevada that flank it. Superficially it is a homogeneous unit;[19] but its plant cover is irregularly varied and difficult to classify. This is shown by the fact that no two of the vegetation maps agree closely, and that all of them recognize one or more vegetation types characteristic of the region and largely confined to it.

Broadly, the region may be defined as a bunch-grass valley containing a core of marshland and surrounded by an inner belt of chaparral-covered hills and an outer one of pine forest. However, the pine encroaches on the chaparral in the north, vice versa in the south; and on the northern coast-range side, the redwood of northwestern forest type has intruded into the pine of western forest affiliations. Even the pine cover is somewhat specialized, being classed by Shantz and Zon as a separate local subtype of yellow pine-sugar pine association (20c, map 4).

So far as native habitat and utilization are concerned, all the plant-cover classifications are somewhat misleading. Californian subsistence was built up about the acorn; and the oak occurs more or less in all the vegetational areas. Even the densely shaded redwood belt includes the tanbark oak (*Lithocarpus*) in its typical association, and the acorns of this oak were most highly esteemed by the tribes that knew them. The Great and smaller valleys to which a grassland cover is ascribed, contained, along the streams and in their moister portions, groves of the large valley oak, which yielded perhaps the heaviest of all the acorn crops. Other oaks pervade the chaparral and run up into the pine. In fact, what the map can only show as uniform chaparral is actually an intimate interdigitation of tracts of the smaller oaks and specific chaparral

---

[18] BAE-B 78, fig. 73, 1925.

[19] Though the physiographers recognize three paralleling divisions, Sierra Nevada, California Trough, and California Coast Ranges (see Sec. XII and map 7), these are given a certain unity, in point of human utilization, by the central valley. The three divisions together coincide rather closely with cultural California.

(*Arctostaphylos, Adenostoma, Ceanothus*).[20] Shelford's lumping of everything below the higher-level pines into a single Broad-leafed Evergreen Semi-Desert of Winter Rains (map 3) is therefore not so crude a procedure as it may at first seem. It expresses at any rate the essential unity of the vegetation so far as native utilization is concerned. Only, it must be remembered that this winter rain semidesert includes southern California, which culturally has been reckoned with the Southwest. Southern California has already been described ethnographically as an area of characteristically Californian subsistence basis with a specific Southwestern culture content above the subsistence level.

For the eastern side of the Great Valley and western gradual slope of the Sierra, C. Hart Merriam has shown[21] a neat correspondence to hold between his life zones and the ethnic groupings, which in turn correspond to minor cultural differences. This correspondence does not hold for the coast-range half of California nor for southern California. Here the life zones run over the map in endless irregularities with which the local ethnic and cultural cleavage lines mostly fail to agree.

Historically the California culture area may be defined as a region lying between the Northwest and Southwest but not reached to any determining degree by influences from either. Influences from both can be traced: from the Northwest, chiefly along the Coast Ranges; from the Southwest, along the Sierra. The sitting cradle among the Pomo, the mourning-anniversary ceremony and feather-stick offerings among the Maidu, serve as examples. Such imports, however, are few, relative to the totality of the culture. This culture, as set forth in the preceding section, evidently began as one similar to that of the adjoining Great Basin, and has never diverged very far from it. However, subsistence in California was so much easier that culture-surplus growths developed. These found a definite climax, though not a very high one, among the Pomo, Patwin, and Valley Maidu (Kuksu cult, Hesi ceremony, Pomo basketry) about the center of the northern half of the area. The rest of the area is not classifiable according to broadly significant distributions, except into better-off valley and poorer hill tracts.[22]

---

[20] Shantz and Zon, Atlas, p. 8; also fig. 5.

[21] Science, 19:912–917, 1904.

[22] S. Klimek, CED: I—The Structure of California Indian Culture, UC–PAAE 37:1–70, 1935, has approached the problem with a statistical analysis of the distribution of some four hundred traits. His map (p. 52) recognizes seven California provinces: Colorado River (including Chemehuevi); Southern California (including Chumash); San Joaquin (Yokuts and Mono); Central (Yuki to Miwok); Northwestern (my California-Northwest Transition: Wailaki, Sinkyone, Wiyot, Chimariko, Shasta); Northwest Coast; Northeastern (Klamath-Modoc). The following are transitional: Wintun, Northwestern and Central; Achomawi-Atsugewi, Northwestern and Northeastern; Salinan, San Joaquin and South-Central; the mountain Maidu and Costano are sub-Central.

From intercorrelation of elements, Klimek has also determined a dozen "culture strata," whose local strength he has mapped on his pp. 54–56. Five of these strata center in as many provinces, seven in the South-Central and Central provinces. Of the latter, four have their respective areas of characterization among the Pomo; the Patwin; the Miwok, Washo, and adjacent Shoshoneans; and the Central province generally; three in the South-Central, among the Chumash-Gabrielino, Cahuilla-Luiseño-Diegueño, and Serrano.

Klimek's study opens up a new type of approach, but his determination of strata goes beyond what can be attempted in the present volume.

While the growth of the Californian climax culture may have been furthered by Northwestern and Southwestern influences, it is clear that these were not its primary determinants. The most specific manifestations of this climax are neither Northwestern nor Southwestern. A favorable ecological margin evidently brought about a cultural luxuriance, which, with but little material from the two greater centers available to work upon, because of remoteness from both, fell back on native materials to elaborate. If it had been otherwise, Pomo basketry should show as a specialization of Northwest California basketry, the Kuksu society as a modification of the datura initiation of southern California; which it would be difficult to maintain reasonably.

California, then, differs from the other intermediate areas, especially the genetically related Great Basin, in that, owing probably to less stringent preoccupation with subsistence problems, it has throughout developed a somewhat more richly characterized culture, and has even been able to mature a definite climax. It differs from the great expansive centers in that it never developed enough cultural energy to impart its products in any serious degree to other areas.

As already mentioned, the groups from the Shasta to the Sinkyone, probably including the western Wintu in Trinity drainage, are transitional between California and the Lower Klamath subculture of the Northwest Coast.

The classification of the area then is:

2a. *(Main) California Area.*

2b. *California Climax,* the lower Sacramento to the Russian River: Pomo, Patwin, Valley Maidu, and Nisenan.

2c. *California-Northwest Transition:* Shasta, probably Wintu west of the Coast Ranges in Trinity drainage, Chimariko, Athabascan tribes from Whilkut and Nongatl to Wailaki and Sinkyone.

## 3. COLUMBIA-FRASER PLATEAU

The two great drainages of the Columbia and Fraser rivers constitute the Plateau area of American ethnology, with which the Great Interior Basin has sometimes been included. As a matter of fact, not only is the Basin distinct vegetationally, ethnically, and culturally, with affiliations primarily toward the Southwest and California, but, as already shown, there is some warrant for classing the Snake portion of the Columbia drainage with it.

This leaves the middle and upper Columbia, and the Fraser above its lowest region. These are the great salmon streams of the continent, south of Alaska; and they water the area in which the Northwest Coast culture is likely to have had some of its beginning and which at any rate still forms its hinterland. As expectable, influences from east of the Rockies have also penetrated this intermountain area; and as it failed to develop any great amount of culture of its own, it has long, and on the whole correctly, been regarded as a region marked by negative traits, by absences, except for its more immediate subsistence adaptations.

Within the area, not only must the Fraser be distinguished from the Columbia, but also the latter must be separated into its middle and upper courses, making three provinces.

3a, the *Middle Columbia* area, is partly sagebrush-juniper and partly bunch-grass steppe, with pine forest on the higher levels. This is the recent Sahaptin area, with a few interior Salish tribes, such as the Wenatchi, Sinkiuse, Spokane; and the Wailatpu.[23] The Sahaptin territory on the lower Snake and Salmon rivers is pine, interspersed with bunch-grass tracts.

3b, the *Upper Columbia* area, is wooded, forming, almost continuously, part of the western or mountain forest, though there is some grassland along the river valleys. This area holds the majority of the interior Salish tribes, from Methow and Okanagan to Flathead; besides them, only the Kootenay.

3c, the *Fraser* area, is the home of another group of interior Salish, the Lillooet, Thompson, and Shuswap, with the Athabascan Chilcotin, Nicola, and perhaps Carrier. With reference to plant cover, this area is variously classified. Malte (map 5) makes it a subprovince of the mountain (western) forest, with three grassland "dry belts" in the south. Shelford shows it mainly as steppe in his general map (map 3), but adds a special map of interior British Columbia which gives the grassy areas in detail.[24] Harshberger (map 2) includes it in his Columbian division of the northwestern forest area; which evidently refers to species representation rather than to habitus or density of vegetation.[25] The common factors in these divergent classifications seem to be that the Fraser drainage is drier than the Upper Columbia, that its forest is sparser and more interrupted by stretches of steppe, and that its flora leans somewhat more toward that of the coast. This last factor is in line with its being a more specific cultural hinterland to the Northwest Coast than is either of the Columbia areas.

The Fraser area has also been partly protected, culturally, against eastern influences by the Upper Columbia, whose forestation would filter out many specific Plains traits. It may therefore be reckoned as culturally nearest, of the three Plateau provinces, to the Northwest Coast. It was the Middle Columbia, with its prevalence of open country, that finally proved most receptive to Plains influences. Of the more special luxury manifestations of Plains culture, like the coup system, the societies, the Sun dance, only fragments got over the Rockies; material adaptations like the tepee, the parflêche, and floral bead designs were largely accepted, and almost made the Middle Columbia culture over. The consequence was an unusually sharp cleavage at The Dalles, where alone Pacific Coast and Plains culture traits met in a conspicuous nonconformity. It must be remembered, however, that this is true of Plains horse culture, probably not of the old culture of the Plains. In 1600 and 1700 the Middle Columbia was still a true transition area, an intermediate low-level zone. By 1800 the Plains influence had begun to come in; most of it probably fell within the nineteenth century; it continued operative in some degree after the beginning of Caucasian settlement; and at the base of the Cascades a little of it turned and flowed southward into a corner of the Basin area in northeastern California, to the Klamath-Modoc and Achomawi. To what respective degree this late Plains influence reached the Sahaptin of the Middle Columbia through the Salishan tribes of the Pend d'Oreille branch of the Columbia, or through the Shoshonean Lemhi and Bannock of the Snake drainage, is not clear. It evidently did not come through the Great Basin Shoshoneans actually in contact with Plains tribes, such as the Ute and Shoshone, else the effects would presumably have been passed on also to their westerly kinsmen the Western Shoshone and Northern and Southern Paiute, which was not what occurred.

---

[23] Boas, BAE–R 41, map, has the Salish before 1800 holding both banks of the Columbia as far down as the Chinook, and the Sahaptin, exclusive of the Nez Percé, on the middle Snake, John Day, and Deschutes rivers.

Two other tribal maps of the region have appeared since my continental tribal map was drawn: Spier's Tribal Distribution in Washington, Gen. Ser. in Anthr., no. 3, 1936; and V. F. Ray's Native Villages and Groupings of the Columbia Basin, Pac. Northwest Quart., 27, no. 2, 1936. Spier's map (p. 43) is for the early nineteenth century, Ray's (pp. 5 ff.) for about 1850. These maps, Boas's, and Mooney's all present discrepancies, due partly to shifts of groups.

[24] J. Davidson in Shelford, fig. 8, p. 155; A. H. Hutchinson, p. 156. These grassy dry belts contain sagebrush and cactus.

[25] Harshberger, 599, recognizes a sage formation (*Artemisia tridentata*) in the middle valley of the Fraser as an extension of the Great Basin flora.

These remarks on recency do not mean that the Columbia and Snake did not serve at all as a channel of communications between the Pacific Coast and Atlantic drainage in prehistoric time. They must have done so. Only, the connections must have been far slighter before use of the horse; and the relatively poor subsistence conditions and consequent low level of culture along the Columbia and Snake would have strained out many of the more specialized traits, and most or all of the luxury developments, of both eastern and western culture.

The ethnological position of the Carrier on the upper Fraser is not clear. Their communications with the coast seem to have been directly across the mountains with Tsimshian and Haisla, not through the Fraser Salish. Almost certainly, also, they maintained more intercourse with their Athabascan kinsmen east of the mountains than did the southward-facing Shuswap. The Carrier may therefore have to be reckoned as forming a separate subprovince, either of the Fraser area or, more likely, of the northwest Athabascan interior.[26]

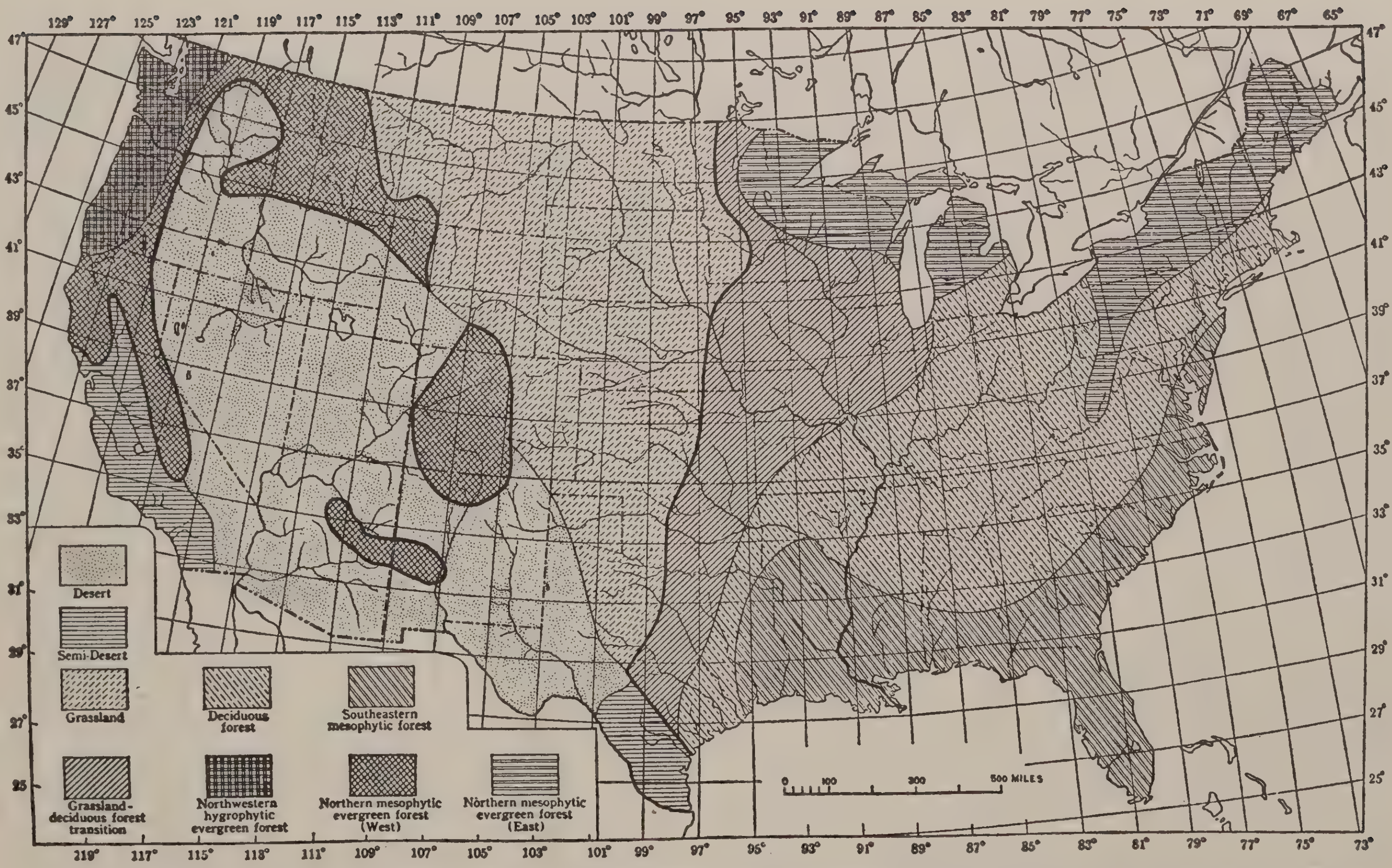
Farther north, inland from the Tlingit, live the Athabascan Tahltan and Taku-tine, on the Stikine and other Pacific rivers, the Taku-tine also partly in upper Yukon drainage. Both groups are part of the Nahane division, the rest of which holds Mackenzie drainage territory. The vegetation maps are not very definite or concordant for this poorly explored region. The Tahltan have been subjected to Tlingit influences. But on the whole it seems justifiable to include them with the other northwestern Athabascans. It is possible that with their interior neighbors, the Kaska, Etchao-tine, and Abbato-tine, they constitute a last, most northerly, intermountain culture group. Even so, however, this would properly form a subprovince of the western or Athabascan division of the great interior Subarctic area.[27]

I add in map 9 a reproduction of Livingston and Shreve's "generalized vegetation map" of the United States, with a heavy line added to bring out more

---

[26] See Eastern and Northern Areas, Sec. IX, 16c, p. 99 below.

[27] The same, 16d.


Desert
Semi-Desert
Grassland
Deciduous forest
Southeastern mesophytic forest
Grassland-deciduous forest transition
Northwestern hygrophytic evergreen forest
Northern mesophytic evergreen forest (West)
Northern mesophytic evergreen forest (East)
0 100 300 500 MILES
129° 127° 125° 123° 121° 119° 117° 115° 113° 111° 109° 107° 105° 103° 101° 99° 97° 95° 93° 91° 89° 87° 85° 83° 81° 79° 77° 75° 73° 71° 69° 67° 65°
47° 45° 43° 41° 39° 37° 35° 33° 31° 29° 27° 25°
219° 117° 115° 118° 111° 109° 107° 105° 103° 101° 99° 97° 95° 93° 91° 89° 87° 85° 83° 81° 79° 77° 75° 73°

Map 9. Generalized Vegetation (9 general types) of the United States; from Livingston and Shreve. The heavy line has been added to express more emphatically the division between open country (desert, semidesert, grass, and shrub) and wooded country (forest and parkland). Open country corresponds fairly closely with the Southwest and Intermediate-Intermountain areas of culture, with the Plains as extension.

graphically a basic distinction which can sometimes be profitably made between open and forested country in general, apart from the specific types of plant cover which constitute each. This map also correlates with that of Russell's dry climates (no. 24). It shows as open country, either desert, steppe, grassland, or shrub, the great mass of the Southwest in the United States; most of the Intermediate-Intermountain territory, namely, all the Basin, most of California, and part of the Plateau; and the Plains and Prairie areas, which remain to be considered. With the exception of the tall-grass Prairies, these all evince ancient cultural interconnection: the Sonora-Yuma area with the Pueblo, this with the Basin, this again with California, Plateau, and true Plains. Only the Prairies lean culturally on the eastern forest into which they pass over a highly irregular boundary.

# IX. CULTURE AREAS: EAST AND NORTH

## Eastern Areas

The rest of the continent north of Mexico, embracing nearly the whole of its Atlantic and Arctic drainages, constitutes a series of areas whose relations are different from those so far considered. The Eskimo, Northwest, and Southwest cultures are highly defined, whereas those of California and the intermountain regions are low-level in characterization and transitional in content. East of the Rockies there is not a single native culture of as high a degree of characterization as occur west; nor, except in some regions near the minimum of subsistence potentiality, any as culturally uncharacterized as some of the western transitional cultures. In other words, the Atlantic side of North America is relatively uniform in its native culture. Its bent or direction is fundamentally similar everywhere. Once local subsistence adaptations and local culture imports are allowed for, there remains little in the way of local development; and, concomitantly, no great degree of difference in culture intensification.

This lightness of cultural contour has its parallels in the environment. East of the Rockies there is not a single high or formidable mountain mass, not an elevated plateau. With all the range in latitude, summers are nearly everywhere hot, winters either cold or at least punctuated by frosts and raw winds; seasonal variation in temperature is accentuated, precipitation fairly distributed throughout the year. The plant cover is prevailingly forest, shading through parkland into open grass only toward the Rockies.[1] There is nothing like the wetness of the Northwest Coast, the deserts of the Southwest and Basin, or the winter rains of California; no extensive scrub nor shrub land. The vegetation areas are fewer, larger, more continuous, the differences between many of them slight.

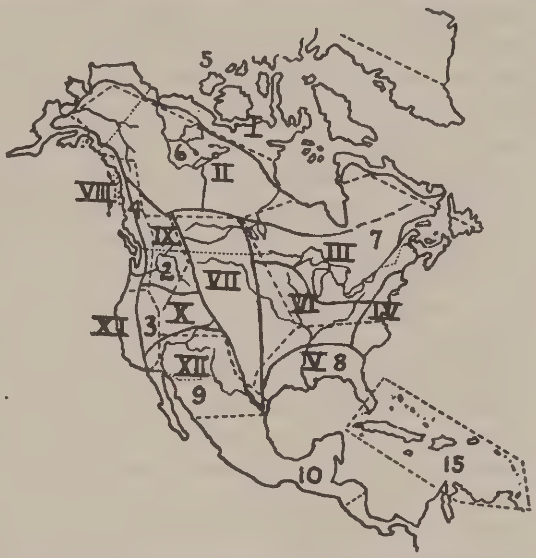
As might be expected, segregation of the vast Eastern territory into cultural areas is difficult, and classification has varied. Mason recognizes six, Wissler only four areas. These have already been cited for their agreements, but their disagreements are equally significant.

Mason's eastern areas are: *Yukon-Mackenzie,* defined as the transcontinental coniferous belt, draining into arctic seas; *St. Lawrence and Lakes,* from Manitoba to northern New England; *Atlantic Slope,* Massachusetts to South Carolina; *Gulf Coast,* Georgia to Texas; *Mississippi Valley; Plains.* As against these, the Wissler eastern areas are *Mackenzie, Eastern Woodland, Southeast, Plains.*

The difference is not only that Mason subdivides further. In fact, his Yukon-Mackenzie area sweeps across the continent to the Atlantic, taking in part of Wissler's Eastern Woodland. The rest of Wissler's Eastern (really Northeastern) Woodland, Mason assigns to his St. Lawrence-and-Lakes, Atlantic, and Mississippi Valley areas, which, however, also overlap into Wissler's Southeast and Plains areas. Wissler, after noting that the characterization of his Woodland culture is difficult, divides it into four types: a northern, non-agricultural and similar in material culture to the Mackenzie; an Iroquoian; a central Algonkin, west of the last named; and an eastern Algonkin, from Abnaki to Delaware. It will be seen that these four subareas do not correspond to the four parts of larger areas which Mason posits in place of their aggregate, the Eastern Woodland. The comparative diagram herewith, map 10, based on Wissler's schematized map and Mason's text, illustrates the degree of discrepancy.

---

[1] G. Friederici, Der Grad der Durchdringbarkeit Nordamerikas, etc., Petermanns Mitteilungen, Ergänzungsheft 209, 216–229, 1930, argues that most of the eastern woodland, at least in the United States, was an open stand without underbrush, easily traversed even by vehicles, this condition being due to systematic firing by the Indians. He also discusses prairies, swamps, oak openings, groves, canebrakes, etc., features which may often have been of more importance for native occupants than the average composition of the prevailing timber cover.



Map 10. The Ethnic Environment and Culture-area Classifications of Mason and Wissler, superposed. Mason: solid lines, roman numerals; Wissler, broken lines, arabic numerals.

With this experience before us, it seems wisest to vary the procedure of Wissler and that which has been followed here so far, namely, of blocking out the grand areas and then subdividing them; and instead, to begin with defining as small areas as justifiable. Of these, I recognize sixteen, plus some subdivisions: not all coördinate, almost surely, but yet difficult to subordinate to major divisions. Indeed, I confess myself unable to set up such a major framework satisfactorily for this large part of the continent. I have followed a quasi grouping into Eastern areas and Northern areas, corresponding more or less to those with and without agriculture or agricultural antecedents, respectively. But this is pretty summary. Within the Eastern group of areas, I accord preëminence to the Southeast; but this again does not take us very far. I do, at several points, discuss historic relations and cultural dependences. For the rest, I can only say that while my sixteen areas may seem seriated as if they possessed equal cultural weight and depth, they obviously are not equivalent. The culture of the eastern part of the continent simply is harder to organize than the rest.

## 1. SOUTHEAST

The Southeast is a long-recognized culture which unquestionably forms a valid unit, provided its area is not made to take in too much, but is limited to the Muskogian tribes and some of their immediate neighbors such as the Natchez and Tunica on one side and the Timucua and Yuchi on the other. This is the area that must be accorded such cultural primacy as there was east of the

Rocky Mountains. But it cannot be regarded as marked off by abrupt transitions of either cultural content or cultural saturation such as one encounters in passing out of the Northwest Coast or Pueblo areas.

There is one thing, however, that corroborates the Southeast as culturally most advanced in the eastern half of the continent: it contained a distinguishable climax or focus. This climax lay on the lower Mississippi, among the Natchez and their neighbors. What sets these tribes apart is slight enough: their class system, with its emphasis on rank and sun symbolism. Their matrilineate, litters, war captive sacrifice-torture, maize-harvest busk, ossuary and perpetual fire "temples," as well as everything that is known of their material culture, are found rather generally through the Southeast, and in part far beyond. It is the peculiar system of class exogamy by extremes, with death of the Stinkard on death of the Sun Spouse, and ranking of the children of Sun males in an intermediate class, that is distinctive. In fact, it is so decidedly unique that its authenticity might be doubted were it not for the corroboration of several reports. There is about this Natchez system something of the quality of a remnant: it is hard to conceive as a product growing out of the general Southeastern social structure. And it is clear that the French received the idea, in part from Natchez tradition itself, that the Natchez had dwindled from a previously more prosperous condition. But, whatever the origin, the system is peculiar and definite enough to fall into the category of a luxury product and therefore to be indicative of a climax condition, whether this was active or waning at the time of discovery.

Captive torture on the frame is another trait that looks like a worn-down survival in the light of Mexican captive sacrifice, sometimes also performed on a frame, and with the Pawnee sacrifice of a girl on a frame occurring even farther north.[2] This in spite of the fact that neither Natchez nor Muskogi seem to have been conscious that the torture was a sacrifice, and that torture extended far beyond the Southeast.

What may seem evidence of another climax, the successful Creek confederacy, must be interpreted as a formation which probably could not have arisen in native times. Not only were most of the Creeks provided with firearms, livestock, and fruit trees before white settlement reached them, but they had seen the Coast tribes, from South Carolina to Louisiana, one after another shattered or wasted under English, Spanish, or French contact. They had in fact received refugees from many of these tribes. Their confederacy was the quadruple product of these reënforcements, of an economic life full of Caucasian absorptions, of pressure or consciousness of threat from the course of white settlement, and of a geographical situation that gave them more than a century of relative respite from fatal conflict with the invaders. Under purely native conditions, the Creek league would not have been so populous, cohesive, or permanent. To a less conspicuous degree, the same applies to the fortunes of the Cherokee, Choctaw, and Chickasaw; and it holds, perhaps even more notably, for the Iroquois in the north. The pattern of these confederacies was mainly or wholly native; their success and subsequent organization in detail were the result of the coming of the whites and the misfortunes of other tribes. These other tribes probably had possessed a very similar social apparatus capable of development toward political integration, but were crushed before this development could grow beyond the native stage. In the light of all this, the "constitutional government" of the "five civilized tribes" was the last of three stages: first, unstable and loosely integrated leagues in native times; second, politically successful confederacies under white stimulus and pressure; and third, imitations of the American government after the loss of independence.

---

[2] Wissler and Spinden, Am. Mus. Jour., 16, 1916; Linton, AA 28:457–466, 1926.

So far as this argument may be accepted, the inference follows that Creek culture was not quite so specialized as the Natchez at the time of discovery, and that therefore there need be little question that the focus within the area was situated on the lower Mississippi.

The tribes includable in the Southeastern area are all the Muskogian peoples; the Yuchi; the Timucua, but none beyond them in Florida; the Siouan Ofo and Biloxi; the Tunican, Natchez, and Chitimachan peoples. The Atakapa seem to have been more or less transitional between this area and the South Texas area, in which they are here placed. The Quapaw-Arkansas may have belonged in the true Southeast, but have been tentatively reckoned as in the Red River area. The Timucua possibly were distinct enough to be considered as forming a subprovince. The Cherokee I exclude. The area, then, extends from the Savannah River to just across the Mississippi.

Except for small areas of prairie and marsh grassland, the whole Southeast was forested. The prevailing cover was of the Southeastern Pines. There were also fairly large tracts of River-bottom, Cypress, or Swamp Forest; of Piedmont Oak-Pine mixture or Transition Forest; and, especially on the northwest, of Trans-Alleghanian Oak-Chestnut Deciduous Forest. The Natchez and their neighbors lived in a habitat of River-bottom and Transition Forest, the Chickasaw largely in Deciduous; the Choctaw and Creek chiefly in the Pine, but also in the Piedmont Transition; the Timucua, Apalachi, and other coast tribes in Pine country studded with hardwood hammocks, traversed by a River-bottom stand along the streams, and fringed by shore marshes; the Chitimacha, and the supposedly Muskogian tribes downstream from New Orleans, in a region of prevailing marsh grassland. These are the attributions in terms mainly of Shantz and Zon (map 4). The other ecological sources differ somewhat in detail, but give a similar picture. Shreve (map 5) and Harshberger (map 2) carry the Southeastern Pine Forest somewhat farther across the Mississippi, so as to include much of Caddo and Quapaw territory; which may be culturally significant. All in all, it is clear that the Southeastern culture was not limited to one type of plant cover;[3] but Pine Forest constitutes its largest block, and conversely most of the Southeastern Pine grew within the Southeastern culture area.

Some centuries before the discovery, there flourished, most outstandingly in the Ohio Valley, but also in the region of the Great Lakes, the Mississippi Valley, and the Southeast, the culture or aggregation of cultures known by the loose name of Mound Builder. This culture has similarities to that of the Southeast, and some sort of relationship is generally assumed. Whether in an earlier time the climax lay in the Ohio Valley region and the Southeast was dependent on this, becoming the climax only on the decay or retreat of the more northerly center; or whether the region of the lower Mississippi was already then the center, as its greater proximity to Mexico would make expectable, and the Ohio Valley culture was a locally flourishing variant—this alternative cannot now be decided. After all, there has not yet been a serious attempt to integrate and interpret in broad terms the large mass of archaeological material which for a century has accumulated east of the Mississippi.

---

[3] The pure pine stand is mainly attributable to local soil conditions.

Since most of the foregoing was first written, Swanton has published a valuable general paper, The Aboriginal Culture of the Southeast.[4] In this he enumerates Southeastern culture elements as well as their distribution in the areal subdivisions, besides sketching the presumable development of the whole type of culture. Both his delimitation and his internal organization of the area differ from mine at a number of points; but, with all deference to his more thorough knowledge, I have decided to let my classification stand as written, for comparison. Swanton excludes from the Southeast the Calusa, Atakapa, Quapaw, and Shawnee, but, like Speck,[5] extends the culture to the Potomac. His subdivisions are: 1, Algonkin tidewater of Virginia and North Carolina; 2, Eastern Siouan area, Piedmont and Coast; 3, Timucua; 4, Creek, with the Georgia coast, Yuchi, Cherokee, and Chickasaw as marginal; 5, Choctaw; 6, Natchez and allies; 7, Chitimacha; 8, Tunica; 9, Caddo. On these matters, the differences between Swanton and myself perhaps largely concern what might be called taxonomic order. Probably of greater historic import is his heavier weighting of inland as against coastal populations; and especially of the culture of the Creek. By my standard, he is interpreting in the light of eighteenth- rather than of sixteenth-century conditions; but others must judge who is most nearly right.[6]

### *Muskogian and Creek*

The problem of what constituted Creeks and what Muskogians remains rather obscure. Swanton's detailed researches have not yet made the fundamentals of the situation clear—in the main, it would seem, because the Creek confederacy was very different things at different times. Muskogian tribes that at one time were wholly independent of the Creek and perhaps hostile to them, later became reduced in numbers, moved, joined the confederacy, and gave up their proper dialect; just as did non-Muskogian tribes like Natchez, Yuchi, and Shawnee. At least three Muskogian dialect groups were represented in the Creek confederacy, besides fragments. These three are the Muskogi proper or Upper Creek; the Hitchiti-Apalachicola; and the Alabama-Koasati. Muskogi therefore denotes, in one sense, a relatively limited group which formed a fraction of the later Creeks; in another and later sense, the whole family of which the Creek along with the Choctaw, Chickasaw, and many others were members.

---

[4] BAE-R 42:673–726, 1928.

[5] Cited below, under "Atlantic Coast Areas."

[6] I believe I am not in fundamental conflict with Swanton in drawing the lines of my Southeast narrower than his. He defines his Southeast with reference to three or four other eastern culture areas; I with reference to fifteen. As between assigning the Caddo to the conventional Southeast or the conventional Plains, for instance, I would unqualifiedly follow him in the former course. Our differences appear to refer to frame rather than to specific relationships.

Two important papers, illustrated by six maps, were read by Swanton at the December, 1932, Conference on Southern Prehistory at Birmingham, Alabama, under National Research Council auspices. I do not cite these, because the mimeographed report is marked "Not for publication"; but all anthropologists trust that both papers may soon be officially published in full or with extensions.

In 1935 Swanton published Notes on the Cultural Province of the Southeast, AA 37: 373–385, in which he reviews various problems of prehistoric and historic culture and population in the area.

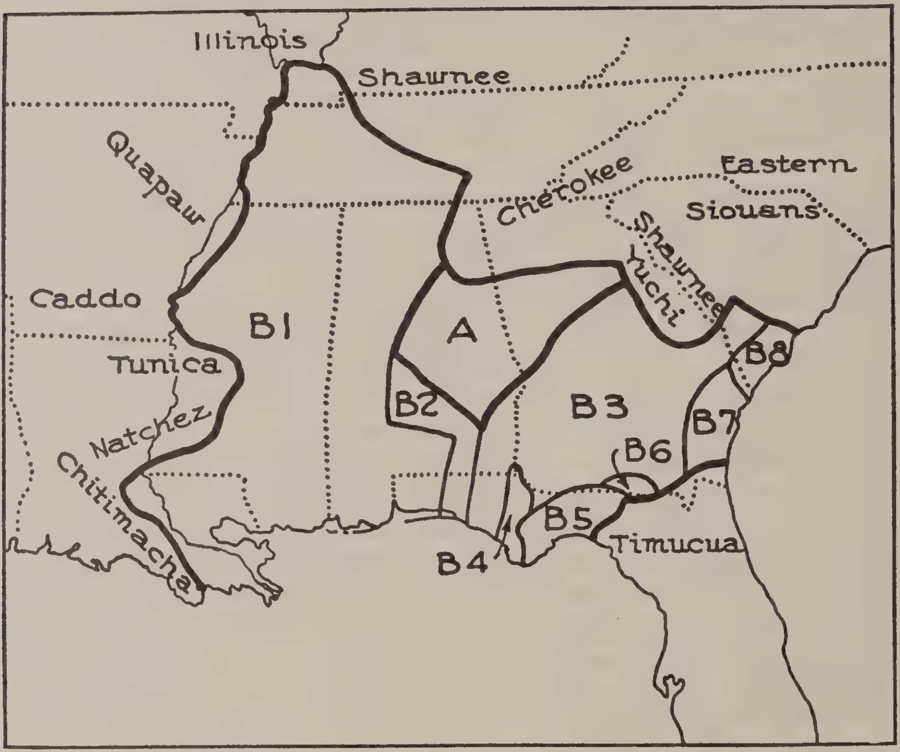
Swanton's linguistic classification of the Muskogian family proper[7] (without Natchez, etc.) recognizes two grand divisions, a "Northern" or Muskogi, and a "Southern." The Northern or Muskogi division (A) has enumerated under it only a number of Creek "towns" like Kauita, Kusa, Eufaula, Tukabachi, Hohliwahali, nearly all of which are Upper Creek. The Southern division (B) has no fewer than nine subdivisions: 1, Choctaw-Chickasaw; 2, Alabama-Koasati; 3, Hitchiti; 4, Chatot; 5, Apalachi; 6, Osochi; 7, Guale-Yamasi; 8, Cusabo; 9, Tuskegee. The Hitchiti proper formed part of the Lower Creeks, as did the related Okmulgee, Oconee, etc.; but again, independent tribes like the Apalachicola are reckoned as part of the Hitchiti dialect group. The same may be said of the Alabama-Koasati group, some of which was, or became, Lower Creek, whereas at least some of it was originally non-Creek politically. The Choctaw-Chickasaw group was the largest of all, and included not only these two nations, which always remained independent, but also a series of tribes (Chakchiuma, etc.) on the Yazoo River; another (Houma to Acolapisa) on the lowest Mississippi and the Pearl River; and a third (Mobile, Pensacola) on the Alabama and western Florida coast. The Chatot, Apalachi, Osochi, Guale-Yamasi, Cusabo groups were smaller, and situated to the south and east of the later Creeks.

I have plotted the approximate distribution of these dialect groups[8] on map 11. It will be seen at once that the names "Northern" and "Southern" are wholly inappropriate for the two grand divisions of the Muskogian family, though they have some justification within the later Creek confederacy. The "Northern" or Muskogi proper division has "Southern" dialect groups on its east, south, west, and northwest. In fact, it is entirely surrounded by them except on the north, where its territory was bounded by that of the alien Cherokee. It is also much the smaller group areally, occupying not more than a sixth of the total Muskogian territory. If, therefore, Swanton's classification of Muskogi proper as one of two coördinate main branches of the Muskogian stocks is linguistically sound, we are confronted by the very anomalous situation that the most distinctive dialect group of the family lies almost surrounded by the others, and that the peripherally situated dialects are not the most aberrant. This raises a suspicion about the classification, namely, that it may have been made primarily with the Muskogi proper (A) in mind, and that hence the nine B groups do not really agree among themselves so much intrinsically as in all differing from the accidental starting point A. If Swanton's primary division into A and B is sustained by equalized comparison of the data, a reason ought to be sought for the distinctiveness of A, on account of the historical significance which the fact necessarily carries. In that event, two possibilities suggest themselves, namely, that the Muskogi proper (A) have somewhat altered their speech through Cherokee contacts; or, more likely, that their habitat set them off somewhat from all their relatives. It is a hill country, where the Appalachian System breaks down, and was prevailingly covered with hardwood forest (oak-pine type) as against the Southeastern coniferous stand that dominated most of the remainder of Muskogian holdings.

---

[7] BAE–B 73:11, 1922.

[8] Except the Tuskegee, since I cannot gather from Swanton's account where he thinks their original habitat lay.



Map 11. Muskogian Dialect Groups; compiled from Swanton's data. A, Northern or Muskogi. B, Southern, comprising: 1, Choctaw-Chickasaw; 2, Alabama-Koasati; 3, Hitchiti; 4, Chatot; 5, Apalachi; 6, Osochi; 7, Guale-Yamasi; 8, Cusabo.

However this may have been, the Choctaw-Chickasaw-Houma-Pensacola group (B1) is much the largest, covering about as much territory as all the rest together. The Hitchiti group (B3) was next largest, and, with the Alabama-Koasati (B2), it joined with the Muskogi proper (A) to form the greater part of the Creek nation in confederacy times. On the whole, A came to constitute the Upper and B2–B3 the Lower Creeks; but with certain notable exceptions, such as Kauita and Kasihta, which spoke Muskogi proper, yet were the leading war and peace towns of the Lower Creeks. The Muskogi proper, being best protected from English, Spanish, and French encroachment and demoralization by their remote situation, probably came in time to occupy a precedence which they were far from enjoying in the wholly aboriginal period. The other divisions (B4 to B8) were small groups forming a southeastern fringe of the stock from the Gulf across the neck of Florida to the Atlantic.

## 2. SOUTH FLORIDA

What is known ethnologically of the tribes of Florida south of Tampa Bay has been brought together by Swanton.[9] It is evident that culture was of Southeastern type, but in a poorer phase: pottery seems to have been made, but agriculture is specifically stated not to have been practiced. The Atlantic Coast tribes in particular led a sort of beachcomber's life. Their gold may have been taken mainly from Spanish wrecks.

The archaeological evidence at first seems conflicting, owing to the prominence of Cushing's famous but still only partly published findings at Key Marco. It is the preservation of wooden objects in muck that distinguishes this site, and Moore has shown that a deliberate attempt to find a second similar site would be nearly hopeless. Nor have other sites been discovered by accident, though a few wooden pieces from other spots in southern Florida have come to light and been described by Fewkes. These allow the ascription of a fairly developed carving art to the southern half of the peninsula at some time in its prehistory. The extensive explorations of Moore, however, confirm the ethnological data in showing that on the whole the ancient culture, like the historic one, was definitely meager south of Tampa Bay. Another fact which excavations seem to have established with fair conclusiveness, though more especially for Tampa Bay and the northern part of the peninsula, is a stratigraphic succession from no pottery to plain pottery to ornamented pottery.[10]

All in all, Antillean influences are not so notable in southern Florida as might be expected from proximity. It seems that such Antillean features as occur in North America are characteristic of the Gulf Coast or Southeast as a whole rather than specific to a South Florida culture area.[11] This would suggest that connections were active chiefly at some time earlier than the discovery, and were followed perhaps by a period of dwindling of relations.

In this connection it is no doubt significant that the climax of West Indian development lay in Puerto Rico and Haiti, and that those parts of the archipelago nearest to Florida showed a meager culture. This was especially true of western Cuba. The Bahamas also, with their limited environment, can have possessed only part of the stock of Antillean culture. Wissler,[12] Gower,[13]

---

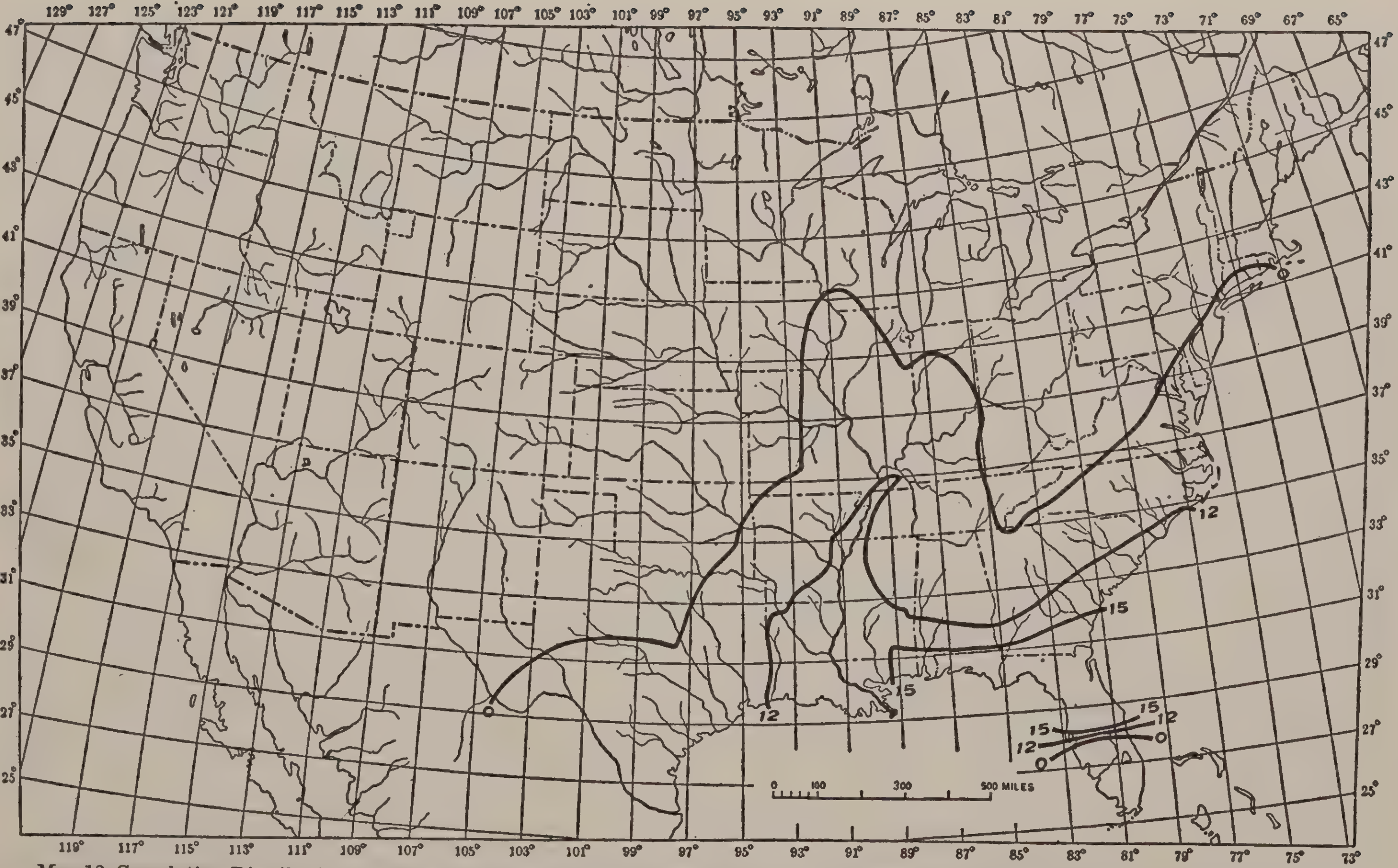
[9] BAE–B 73, 1922, esp. 387–398.

[10] Cushing, Proc. Am. Philos. Soc., 35:329–342, 1896; Fewkes, SI–MC 76, no. 13 (publ. 2787), 1924, 80, no. 9 (publ. 2960), 1928; C. B. Moore, Jour. Acad. Nat. Sci. Phila., 11:352–394, 1900, 11:421–497, 1901, 12:127–357, 1902, 12:364–394, 1903, 13:126–244, 299–325, 1905, 13:406–470, 1907, 16:515–577, 1918; J. Wyman, Mem. Peabody Acad. Sci., 1:1–94, 1875; S. T. Walker, SI–AR for 1879, 1881, 1883; N. C. Nelson, AMNH–AP 22:75–103, 1918; W. H. Holmes, BAE–R 20, 1903.

[11] W. H. Holmes, AA 7:71–79, 1894.

[12] American Indian, 257, 1922.

[13] AAA–M 35, 1927.



Map 12. Cumulative Distribution of Fifteen Southeastern Deciduous Trees; from Livingston and Shreve. Particularly significant is the non-occurrence of these typical species in southern Florida. On the other hand, the maximum number of species occurs in the Southeastern Pine area; and there is an obvious extension north along the Atlantic coast plain.

Loven[14]—the last on the basis of an intensive analysis—agree that West Indian culture is fundamentally South American. South Florida and west Cuba-Bahamas therefore were the poor peripheries of two areas whose centers in 1500 A.D. lay far apart—one on the lower Mississippi and the other on the South American mainland. This appears to be the reason why the tip of the peninsula, in spite of the fact that its climate and life were tropical, did not form an outright part of the Antillean culture area: mainland contiguity to the Southeast prevailed over environmental unison with the islands. At an earlier period, when cultural and ethnic relations were different, it may have formed part of the Antillean area.[15]

Southern Florida is a distinct natural area, though far from an ecological unit. The vegetation maps differ in terminology of characterization as well as in detail of area, but agree in marking off at least part of the southern end of the peninsula from the remainder of the southeastern United States. Harshberger (map 2) and Shelford (map 3) indicate the Antillean relations of the flora; Merriam puts the tip of the peninsula into the Tropical life zone. A small map of tree-species distribution, reproduced in map 12 from Livingston and Shreve, is an index of the particularity of the region. The outstanding climatic features are high temperature, due not only to latitude but also to warm ocean waters; and seasonal precipitation of savanna type—dry winter and wet summer. Land form, drainage, and soil cause the marked variations within this frame. The Everglades, for instance, alternate each year between being a lake and a prairie; surrounding them are swamp, scrub, tropical, mangrove, deciduous, and pine forest, and mixtures of these. Watson's classification of Florida plant covers,[16] though referring to the state as a whole, usefully supplements the somewhat schematic presentation of the maps, as table 3 shows.

Map 14, below, also shows incisively the high specialization of South Florida in evergreen broad-leaved trees.

In summary, it is clear that the southern end of the peninsula presents a distinctive environmental as well as cultural type. The ecology approaches the tropical, the culture is low-level. The environmentalist explanation would be that tropical environment retards or depresses culture through its physiological effect on the human organism. But this explanation leaves out cultural or historical factors, which are necessarily operative in all cultural phenomena, in order to build up a pseudo law by injecting remote, vague, and indirect physiological factors. A reasonably sufficient interpretation is given by the interaction of environment and history. The culture of South Florida, being mainly derived from that of the Southeast with its essentially temperate adaptation, lost something and gained little by its transplantation to a different environment. That this environment was tropical is a mere incident: the Southeastern culture diminished equally in intensity northward in proportion as it extended into cooler temperate habitats. If the historic culture of the Southeast had been primarily South American or Antillean in origin, tropical Florida would presumably have preserved it most fully and the rest of the Southeast have shown the impoverished form.

---

[14] Ueber die Wurzeln der Tainischen Kultur, pt. 1, Göteborg, 1924.

[15] As suggested by Fewkes, 1924, Conclusion.

[16] In Shelford, 427–440. Compare Harshberger, 227–232, 695–700.

This, then, illustrates how ecological considerations strengthen the historical conclusions toward which anthropologists have tended as a result of analysis and comparison of culture.

TABLE 3

FLORIDA VEGETATION TYPES

(After Watson)

1a. Grassy swamps, savannas, and marshes. Most of the southern third of the peninsula. Everglades. *Cladium effusum* saw grass.
    1b. Salt marsh. *Spartina,* and in extreme south *Mariscus jamaicensis* saw grass.
    1c. Mangrove swamp.

2a. Flatwoods. Open pine forest on level, poorly drained, acid soil, interspersed with bog vegetation.
    2b. Cypress swamp. Depressions in flatwoods, stream and lake borders. Big Cypress swamp southwest of Lake Okeechobee.

3a. Scrub. On drier sands and dunes. Saw palmetto, evergreen oaks, *Opuntia, Ilex;* on dunes also cabbage palmetto, *Agave, Yucca.*
    3b. Spruce pine, *Pinus clausa,* on less dry sand, interspersed among 2 and 4.

4. High pine woods. Rolling, well-drained country. Open stand of long-leaved pine, interspersed with saw palmetto, scrub oak, lupin, chinquapin, short grass.

5. Hammocks. Hardwood forests, deciduous and evergreen.
    5a. High-hammock climax. Evergreen magnolias, red bay, and holly dominant.
    5b. High hammocks. Deciduous trees preponderant. Most extensive toward northern parts of state, where it merges gradually into the eastern deciduous forest. Farther south, transitional between 4 and 5c.
    5c. Low hammocks. On wet lands between 2b and 5c. Tupelo, ash, maple, hackberry, water oak and swamp oak, magnolia, cabbage palmetto.
    5d. (=6). Tropical hammocks. Dense jungle, mostly evergreen, with lianas and epiphytes. Banyans, wild papaya, *Swietenia, Ficus, Ocotea,* hickory.

## 3. SOUTH TEXAS: NORTHWEST GULF COAST

South Texas is an area which is little known. Every tribe in it has long been culturally extinct; some are absolutely so. Cabeza de Vaca found them poor and hungry; and so they seem to have remained. They were cannibalistic. They practiced no agriculture. They got bison too rarely to depend on them. They made little pottery. There was, no doubt, a subsistence differentiation between those immediately on the coast and those inland, but otherwise the culture seems to have varied little in fundamentals. The peoples involved were the Karankawa, the Tonkawa, and later in part the Athabascan-Apache-Lipan. The agricultural Atakapa[17] leaned toward the Southeast, but may be counted in cultural Texas. Part of the territory attributed to the Mescalero Apache on map 1 may once have belonged in. The Coahuiltec on both sides of the lower Rio Grande, and the so-called Tamaulipec to the south beyond, very likely were closely related in culture to the South Texas peoples. It is toward the southern boundary of the Tamaulipec, a little north of the Pánuco River, that agriculture and pyramidal structures appear and the South Mexican culture may be said to begin.

---

[17] BAE–B 43:35–36, 360–363, 1911.

The South Texas area—or, better, the Northwest Gulf Coast area of which it is part—accordingly reaches from the edge of cultural Mexico almost to the border of the Southeastern climax. Expectably, this intervening area should manifest some traces of having been the medium through which the generally recognized connections between these two areas of higher-level culture passed. Instead, we have what Swanton aptly describes as a cultural sink.[18] Archaeological exploration, which has never been systematically attempted there, may bring something to light; but nothing very notable is to be expected, else some indications should have appeared through cultivation and settlement before now. The problem is the more puzzling in that those Southeastern traits which seem most Mexican are generally not represented in the Southwest, and vice versa,[19] so that a theory of circuitous diffusion around the South Texas area also seems contrary to the facts. If there were evidence of maritime movements along the shores of the Gulf or across it, one could more readily assume these as the mechanism of Mexican-Southeastern connections. Mexico City, Santa Fe, and Natchez form very nearly an equilateral triangle; and from Tampico to the mouth of the Mississippi is no farther, even by land, than from Mexico City to El Paso.

The cultural backwardness of the Northwest Gulf area—or, at any rate, of its Texan portion—is also difficult to understand on environmental grounds. The rainfall ranges from 50 inches at the mouth of the Sabine to 20 at the mouth of the Pecos, the lower Rio Grande having about the mean. The precipitation-evaporation ratio ranges from semihumid to semiarid (map 13). Much of the area is agriculturally productive under Caucasian settlement.

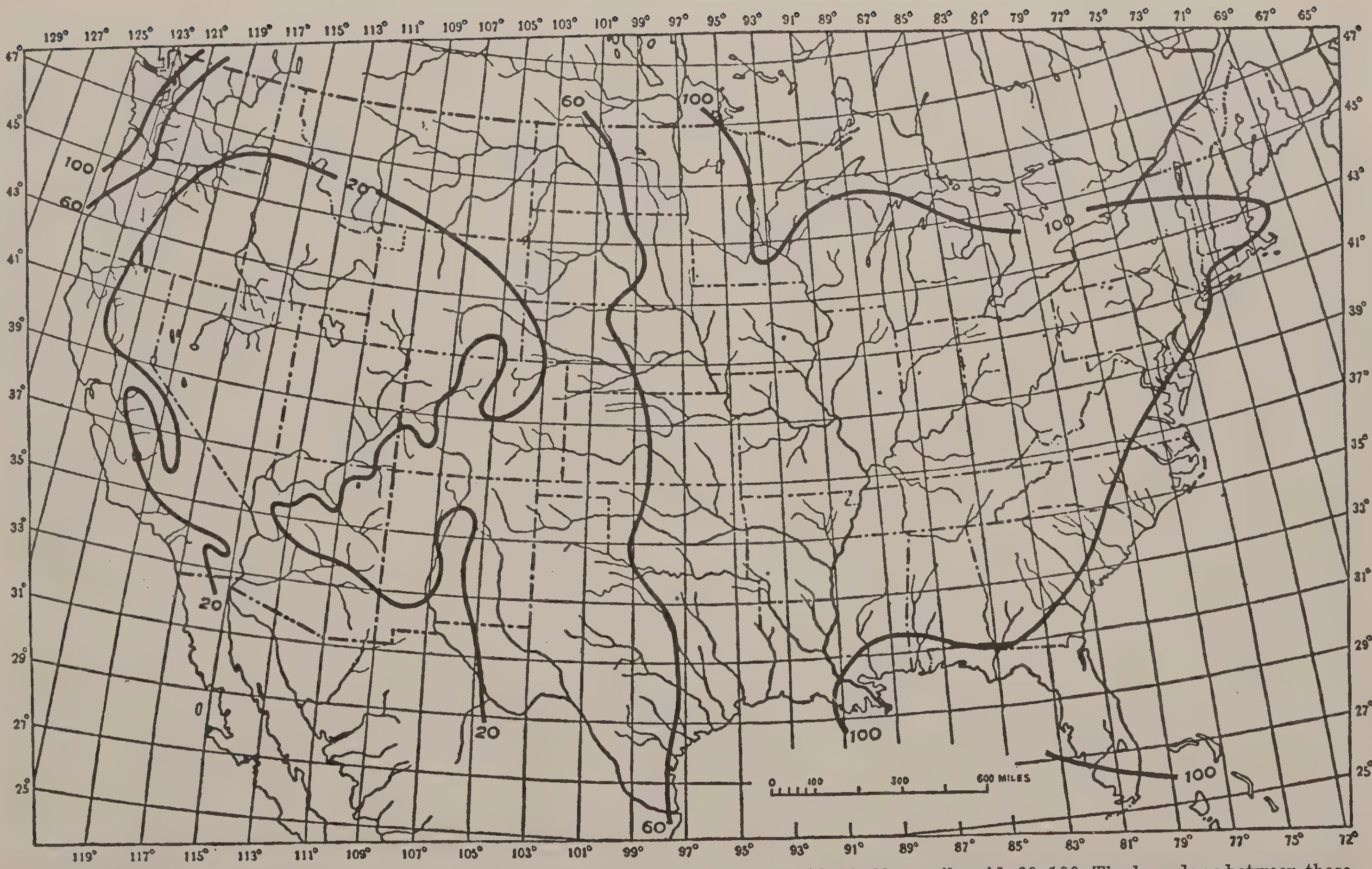
The plant cover is variously described, so as to suggest local peculiarities difficult to fit into broad schemes of classification. Shreve follows the Rio Grande down on the north side with a Texas Succulent Desert and Texas Semidesert (map 5), where Shantz and Zon assign Creosote Bush and Desert Mesquite Savanna, with areas of Desert and Tall Grass (map 4). Along the coast they are in not much better agreement. Harshberger (map 2) emphasizes a Mexican constituent in the flora as far as San Antonio and Matagorda Bay.[20] Map 14 shows microphyllous trees following the coast to the eastern edge of Texas and extending north into the Panhandle, and the lowest part of the Rio Grande Valley as the region of maximum accumulation of such tree species in the United States. Map 12 shows species of southeastern deciduous trees extending, though in diminishing numbers, south to the Rio Grande and west to 104°. There does seem general agreement that from the Guadalupe or Nueces west and south the natural plant cover is xerophytic in spite of the considerable precipitation—evidently on account of dry winters and rapid evaporation

---

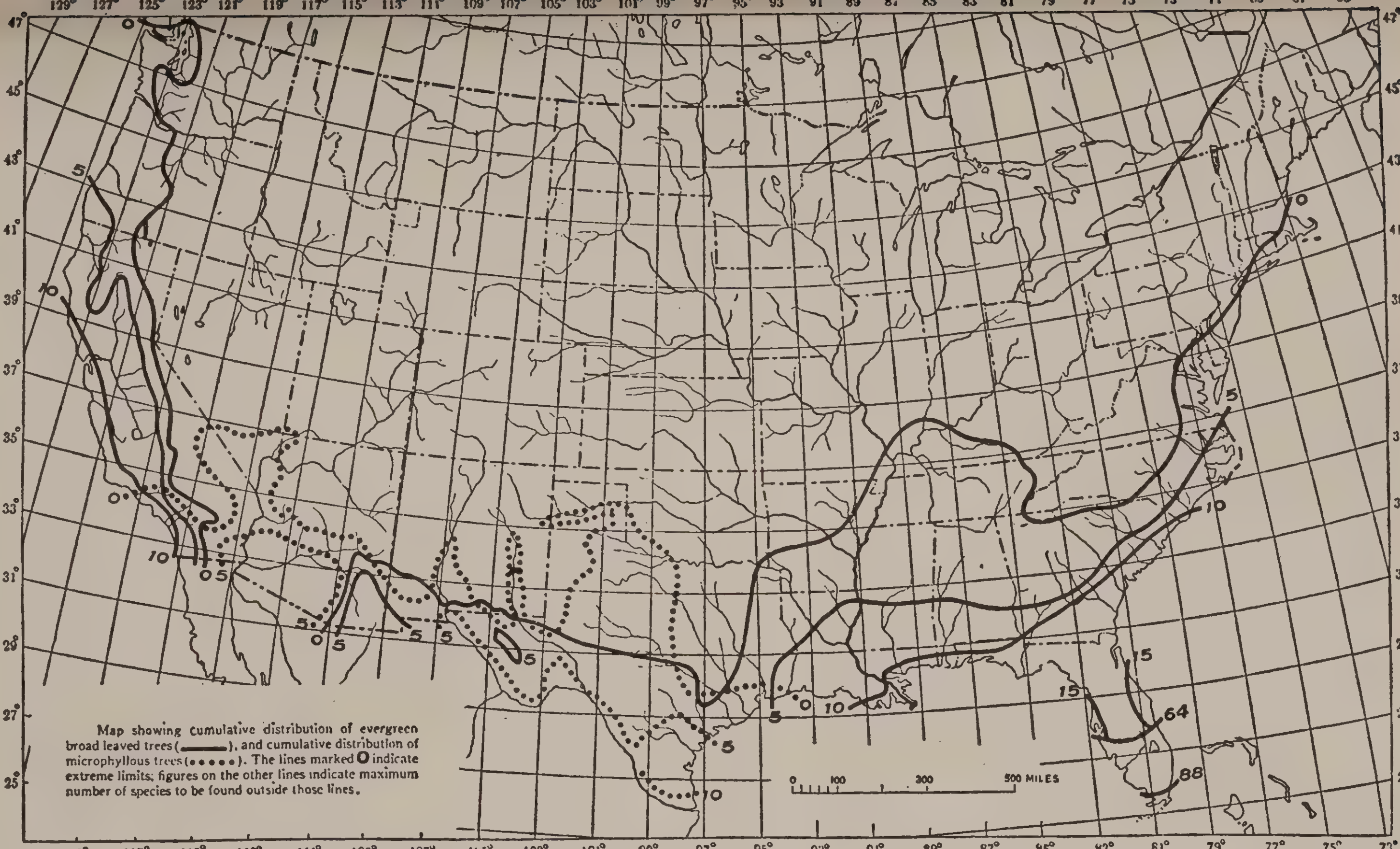
[18] ICA 20 (1922, Rio de Janeiro):53–59, 1924.

[19] Thus scaffold sacrifice and ball courts, on the one hand; the metate, masonry, and masks, on the other.

[20] Harshberger, work cited (see above, p. 14), pp. 659–660; also pp. 514, 528–531.


100
60
20
100
60
20
20
100
100
100
60
0 100 300 600 MILES
129° 127° 125° 123° 121° 119° 117° 115° 113° 111° 109° 107° 105° 103° 101° 99° 97° 95° 93° 91° 89° 87° 85° 83° 81° 79° 77° 75° 73° 71° 69° 67° 65°
119° 117° 115° 113° 111° 109° 107° 105° 103° 101° 99° 97° 95° 93° 91° 89° 87° 85° 83° 81° 79° 77° 75° 72°
47° 45° 43° 41° 39° 37° 35° 33° 31° 29° 27° 25°

Map 13. Precipitation–Evaporation Ratio; from Livingston and Shreve. Semiarid, 20:60; semihumid, 60:100. The boundary between these two provinces, roughly following the famous hundredth meridian line, coincides rather closely with important distinctions in physiography, flora, fauna, and native as well as modern economic culture.


Map showing cumulative distribution of evergreen broad leaved trees (▬▬), and cumulative distribution of microphyllous trees (●●●●●). The lines marked O indicate extreme limits; figures on the other lines indicate maximum number of species to be found outside those lines.
0
100
300
500 MILES
119°
117°
115°
113°
111°
109°
107°
105°
103°
101°
99°
97°
95°
93°
91°
89°
87°
85°
83°
81°
79°
77°
75°
73°
47°
45°
43°
41°
39°
37°
35°
33°
31°
29°
27°
25°
5
10
15
64
88

Map. 14. Number of Species of Evergreen Broad-leaved Trees (solid lines) and Microphyllous Trees (dotted lines); from Livingston and Shreve. Notable are the divergence of South Florida and South Texas from the Southeast as a whole, though in opposite directions; the relative strength of California in broad-leaved evergreens; and the transitional participation of the Sonora-Gila-Yuma (but not Pueblo) subarea of the Southwest in both the California and the South Texas nondeciduous silva.

in summer; and that to the east of these streams savanna or scrub or oak woodland (cross timber) prevails over true forest. But there certainly is no vegetational unity underlying the cultural area. Perhaps it was not so much a culture unit as really a sump—a series of somewhat varying habitats none of which was favorable to the major subsistence patterns worked out in Mexico, the Southwest, and the Southeast.

In contrast to Linton, who sees most specific Mexican traits that occur in the Southeast lacking in the Southwest, and vice versa,[21] Swanton is "inclined to regard most Mexican influences as having been introduced [into the Southeast] via the Pueblos rather than by the more direct route [of southern Texas]." Swanton's formulation of the limits of the "highest levels of the culture of the Southeast" is also worth summarizing here with special reference to the suddenness of the transition toward the west:[22]

> The lower Mississippi Valley; "back from" the Gulf Coast eastward to the Atlantic, including northern Florida; *formerly*, most of the Ohio Valley; the Iroquoians forming a marginal territory. Along the Atlantic Coast the Southeastern culture shaded out much more rapidly. To the northwest, it extended "not much beyond the Mississippi"; to the west, "it ended rather abruptly with the Caddo tribes" of northwestern Louisiana and northeastern Texas (the habitat of these tribes falling short of the Trinity River and not reaching the coast); on the Gulf, it "cannot be traced beyond Vermilion Bay, Louisiana."

### 4. RED RIVER AREA

The Caddo group is usually considered transitional between the Southeast and the Plains. These people were subjected to strong Spanish and French influences from the end of the seventeenth century, their tribal organizations have been partly dissolved and reconstituted, and their culture is much broken. They farmed, made pottery and wicker and twill basketry, lived in village settlements that were sometimes straggling or scattered, built large domed houses of thatch, erected mounds, kept perpetual fire burning in a temple or communal structure, acknowledged the authority of an intervillage or intertribal religious head, celebrated a first-maize and harvest festival, sometimes tortured or sacrificed captives on the frame. This culture obviously is basically Southeastern, with affiliations to the Natchez rather than the Muskogian tribes, but with some of the Natchez specializations lacking and with certain differentiations of its own, such as the predominant use of grass houses. Wissler puts the modern Caddo, Kichai, Waco, Tawakoni into his Southeastern area, the Wichita into the Plains; the separation of the latter seems arbitrary, except perhaps for modern times.

This was a deciduous forest area. By the Shantz-Zon classification (map 4), it lay prevailingly in the Oak-Pine Eastern Forest, partly also in Oak-Hickory, Southeastern Coniferous, and River-bottom Forest. In the nineteenth century some of the western tribes were in the prairie extending south through Dallas and Fort Worth and that about the Wichita Mountains. It is not wholly clear whether these were Caddoan habitats in native times; and, if so, whether the tribes in them depended more on farming or on bison hunting. All the areas in question lie east of the hundredth meridian and are cultivable.

---

[21] AA 28:464, 1926.

[22] ICA, 1924, as cited. This delimitation differs somewhat from the one in BAE–R 42: 673–726, 1928, which has been discussed above.

The limits of this subculture are difficult to draw on the north and east. The Quapaw-Arkansas, the southernmost Siouan people west of the Mississippi, may have belonged either in this or in the Southeastern area: they used palisades, for instance.[23] The Osage are also difficult to place. Thanks to La Flesche, we know several of their rituals in detail; but these give relatively few indications of the type of the culture as a whole. Osage organization into patrilinear clans and exogamic moieties is "Central" Siouan, but certain features, such as the relating of the moieties to peace and war, recall the Southeast. The situation of the central Osage settlements on the Osage River well inside of Missouri points to affiliation with the Siouan tribes rather than those to the south. The large extent of territory ascribed to them on the map, following Mooney, is probably misleading in this connection. The nucleus of Osage habitat was in woodland.

Well to the northwest of the Osage, in the prairies of the middle Platte drainage, were the Caddoan Pawnee, who are particularly difficult to place. Usually reckoned loosely with the Plains tribes, they show a village organization, matrilineate, captive sacrifice, star symbolism, and similar traits which either relate directly to the Caddo-Natchez culture or at any rate set them off from both the Prairie and Plains tribes. There is some tendency to regard the Pawnee as the eastern tribe showing most relations to the Pueblos, and as possible intermediaries between the Southwest and the Plains and Southeast. But the general cast and emphasis of Pawnee culture are certainly very different from Pueblo, or even from that of the eastern Apache. In connection with this problem the question of the certain identification of the Pawnee and their territory in the period of discovery is important. Their nineteenth-century habitat centered in middle Nebraska, but their earlier territory has been placed in eastern Kansas. If the Caddo extended farther north into Oklahoma the two groups may still have been adjacent not many centuries ago. At any rate, there is no reason why contacts between them should not have remained open. If the authority for map 1—here, Mooney—is right, most of the intervening area was thinly occupied even at the beginning of the nineteenth century, constituting back country of the Osage and Kansa, the latter a small tribe. It seems altogether likely that Pawnee culture was basically a variant of Caddoan, but that on account of its more northwesterly situation, and perhaps relative freedom from exposure to Spanish and French contacts, it came more largely under Plains influences after the horse became common.[24]

To summarize: provisionally the Quapaw may be reckoned as belonging with the Caddo (4a); the Osage, with the southern ("Central Siouan") Prairie tribes (6a); the Pawnee as forming a subtype (4b) of Caddo culture, with recent horse-bison culture overlay.

---

[23] Or again, they may have belonged with the other "central" Siouans in the Prairie area. Little is available about them ethnologically, and my assignment of them is no more than a guess.

[24] Much new light is shed by Strong's Introduction to Nebraska Archaeology, SI–MC 93, no. 10 (publ. 3303), 1935. He holds the Pawnee to have been long in Nebraska, and to have undergone a cultural florescence in the prehistoric period from 1540 to 1682, decline setting in after the introduction of the horse. The Upper Republican archaeological culture is presumably a prehistoric stage in Pawnee development, and is attenuated Southeastern. See especially Strong's pp. 9, 13, 15, 55, 245, 272, 273, 296.

## 5. PLAINS AREAS

The viewpoint from which the Plains are here treated has been previously outlined in connection with a review of the cultural relations of the Southwest.[25] Essentially the view held is that the Plains culture has been one of the well-developed and characterized cultures of North America only since the taking over of the horse from Europeans, and that previously there was no important Plains culture, the chief phases in the area being marginal to richer cultures outside. In brief, the historic Plains culture was a late high-pressure center of culture in a region which previously had been rather conspicuously low-pressure. That there is nothing revolutionary in such a view is shown by the fact that as long ago as 1916 Sapir in a sentence analyzed the recent Plains culture into non-Plains origins.[26] The reason why he did not follow the matter farther is that his essay was concerned with method rather than fact.

The Plains tribes, along with the Pueblos, Northwest Coast Indians, Californians, and Eskimo, are among the most intensively investigated in America. The reason has been the incentive to study extended by the saturation of their late culture, plus its preservation well into the nineteenth century. Even today it is possible to find informants who have experienced the old life and are able to give clear, vivid accounts of it. The returns being richer, more ethnological interest was directed to them. Specialization followed, and on that some inevitable loss of perspective. This relatively rich culture, so much more satisfying to deal with than the remnants of that to the east or the meager ones of the Plateau and to the far north, began to be intimately dissected in some of its aspects—but mainly with reference to itself, not to its outward relations. Spier on the Sun dance,[27] Lowie on age societies,[28] Wissler on shamanistic and dancing societies,[29] analyzed historic developments within the culture as it was. How the culture as a whole came to be, was less and less asked. Wissler perhaps did most both to extend and to fix the concept of the Plains area, and to define its center.[30] He even went so far as to indicate that its culmination lay most probably among the Oglala Teton Dakota, with Arapaho, Cheyenne, and Crow participating next in order.[31]

Another factor contributed to the essentially static conception. Wissler found that when the Plains tribes took up the horse they did not make their culture over.[32] Travois transportation, the tepee, the bison hunt under control, had all been there before. The horse was simply put into the old patterns and made these more productive. It was easier for the tribes to do this than to evolve or adjust to a new set of patterns. As an analysis of cultural dynamics or social psychology, this was a valid demonstration. Too largely, however, it seems to have been tacitly interpreted also as a historical conclusion, that Plains culture after the horse went on much as before. Very little reflection shows that this could not have been so. Could any good-sized group have lived permanently off the bison on the open plains while they and their dogs were dragging their dwellings, furniture, provisions, and children? How large a tepee could have been continuously moved in this way, how much apparatus could it have contained, how close were its inmates huddled, how large the camp circle? How often could several thousand people have congregated in one spot to hold a four or eight days' Sun dance? By the standard of the nineteenth century, the sixteenth-century Plains Indian would have been miserably poor and almost chronically hungry, if he had tried to follow the same life. Showy clothing, embroidered footgear, medicine-bundle purchases, elaborate rituals, gratuitous and time-consuming warfare, all these he could have indulged in but little—not much more than the tribes of the intermountain or southern Texas regions.

---

[25] UC–PAAE 23:375–398, 1928.

[26] Time Perspective in Aboriginal American Culture, Canada Geol. Surv., Mem., 90 (Anthr. Ser., no. 13):45, 1916.

[27] AMNH–AP 16:451–527, 1921.

[28] Same, 11:877–984, 1916.

[29] Same, 11:855–876, 1916.

[30] AA 16:447–505, 1914 (449–451 and map); The American Indian.

[31] AA 16:473, 1914.

[32] AA 16:1–25, 1914.

In short, ethnologists have gradually become so interested in the specialized manifestations of Plains culture that they have forgotten that largely these are definite luxury developments possible only with the subsistence basis of life adjusted unusually favorably and dependably. That such an adjustment could have been made through the mechanism of dog traction by a migratory people dependent on a migratory animal for their food, is highly problematical.

With the horse and all its culturally intensifying consequences taken away from the tribes of the western or true plains, such as the Blackfoot, Crow, Teton, and Arapaho, these have left but a meager stock of culture. The same subtraction from the agricultural Prairie tribes—Mandan, Santee, Pawnee, or Omaha—would leave them far more. In the sixteenth century, then, I believe that culture within the so-called Plains area was richest and centered in the prairies, not the plains, and was not primarily but only incidentally based on bison subsistence. But the Prairie tribes show affiliations to both the Southeast and the Northeast; and the Plains culture is thereby made doubly dependent. In the sixteenth century, instead of being a climax, it was not even subclimax: it was peripheral.

If it seems unlikely that a ritual as elaborate as the Sun dance grew up in a few hundred years, the answer is twofold. First, many of its elements—torture, painting, altar, bundle—occur in other associations and may be ancient, while the complex of elements that constitute the ritual is younger. Secondly, that ceremonial elaborations in this area can be highly unstable is evident from comparison of societies; for instance, the age-graded ones of the Arapaho and Atsina (Gros Ventre).[83] These are alike enough to make it certain that they represent, in the main, deviations from an original common system. The two tribes are closely related in language, and the Arapaho regard the Gros Ventre as the northernmost of their five divisions. The two groups had separate ranges as early as 1750, but may well have been still a unit in 1600 or even 1650. With the ensuing geographic separation to help, the dialectic divergence between them could easily have been achieved by 1900, it would seem. The differences between the society systems of the two tribes comprise added or dropped societies, transfer of functions from one society to another, and transposition of societies in the age order. What is an elderly, important group in one tribe, is a young group, near the beginning of the sequence, in the other. It is difficult even to imagine a mechanism by which a change like this could have taken place in a system after this had become based on the principle of seniority. It is much as if in some European countries Wednesday came after Thursday. Yet the change is there. If a now closed system could alter as this one has in two to three centuries, a new one could certainly crystallize as quickly, whether it be a society series or a Sun dance.

---

[83] AMNH–AP 1:141–280, 1908; see esp. pp. 230, 260.

What it is suggested happened is that not only ritual complexes, but indeed all sorts of cultural patterns, quickly blossomed out in the plains after the introduction of the horse had converted a strugglingly precarious or seasonal mode of subsistence into one normally assured, abundant, and productive of wealth and leisure. This development was strongest where the effect of the horse was greatest, in the true or western short-grass plains. Here, then, there rapidly grew up a new center—an active crater of culture, to use Wissler's figure. This in turn reacted on the agricultural tribes of the prairies, strongly influenced the nearer intermountain tribes as well as several at the edge of the northern forest, and about 1800 sent its influences down the Columbia to the Cascades. The new culture was not only active and intensive, it was still expanding when white settlement killed its roots.

It is scarcely contendable that the western plains were wholly uninhabited before the horse was available. Agricultural groups from east and west probably strayed in now and then and tried to farm. Small groups could make a living by combining bison and river-bottom hunting with berry and root gathering. But the population probably clung in the main to the foot of the Rockies, where wood, water, and shelter were more abundant, fauna and flora more variegated, a less specialized subsistence mechanism sufficient; and from there they made incursions into the plains to hunt their big game, much as the prairie and parkland and even forest tribes ranged in from the east in the historic period. Such habits would account for the dog travois and folding tent. They would give to the plains some human utilization and occupancy. They would not leave room for a specialized culture to center there.

Wissler's views on the Plains have undergone decided changes. In 1907[34] he advocated substantially the position here maintained. He even spoke of the plains as uninhabited, and the moving out into them as due to the horse.[35] In 1914[36] he held that the horse "is largely responsible for such modifications and realignments as give us the typical [western, Blackfoot to Comanche] Plains culture of the nineteenth century";[37] and that the "vigor and accentuated association of traits" of this culture could not have been achieved without the horse. On the other hand, "no important Plains traits except those directly associated with the horse [like saddles] seem to have come into existence" after its introduction; "all the essential elements of Plains culture would have gone on, if the horse had been denied them"; and "from a qualitative point of view the culture of the Plains would have been much the same without the horse."[38] While no "important traits, material or otherwise, were either dropped or added," yet "the relative intensities of many traits were changed, giving us a different cultural whole," and leaving to the horse its strongest claim "as an intensifier of original Plains traits."[39] Horse introduction is also held responsible for "reversing cultural values," that is, causing old nomadic (Shoshonean) cultures to "predominate" over the "previously dominant sedentary cultures of the Siouan and Caddoan tribes."[40] In short, a new culture grew up wholly out of old elements through the introduction of the horse. A later paper in 1914,[41] and The American Indian in 1917 and 1922, go further in that they accept this new culture almost as if it were timeless. The purely horse-using tribes are described as forming the "center" of the area, and tribes like the Omaha and Pawnee as culturally less typical and dependent. This is of course a static interpretation of a historic moment. In short, Wissler's first approach was historical; his second, historical and analytic; his third, descriptively analytic.

---

[34] ICA 15 (1906, Quebec):39–52, 1907. [35] Same, 44, 45. [36] AA 16:1–25, 1914.

Returning to the primary consideration, we can summarize by saying that in the main, in the prehistoric period, the cultural emphasis of the conventional "Plains culture area" region lay on its borders; the plains themselves were a cultural margin.

From this aspect, the so-called Plains area breaks up into several smaller areas. One is adjacent to the Southwest; another, to the intermountain regions farther north; on the east there can be recognized, besides the Caddoan or Red River area which is essentially Southeastern, a central Siouan, a north Siouan, a village, and a Canadian Prairie area.

### 5a. *Southern Plains*

This is the area adjacent to the Southwest and more or less dependent on it. Its modern representatives are the Comanche, Kiowa, and Kiowa-Apache. The Lipan and possibly the Tonkawa may have belonged here rather than in the South Texas area, at some time in their career; so may part of what are now recognized as Apache, the Mescalero and Jicarilla. These Apache very likely represent rather well in some ways the status of the old Southern Plains culture. The Spaniards called them, or related bands, Llaneros and Vaqueros. They were mountain tribes, marginally Southwestern, fronting on the plains and hunting bison. The Kiowa-Apache look like one of these eastern Apache bands, who, after they had the horse, committed themselves definitely to the bison and the plains, and on account of numerical weakness joined themselves to the Kiowa. The other eastern Apaches clung to their mountains, or were beaten back into them, continuing to use the plains as an auxiliary range. If we knew more about them and the Kiowa and Comanche, we should probably see many resemblances. Their style of bead embroidery is certainly similar; and, in its outlining quality, distinct from that of the more northerly Plains.[42] Linguistic affiliations point the same way. Mooney accepts the Kiowa tradition of a northern origin; but the Kiowa language seems to be related to Tanoan.[43] Comanche is nothing but a Shoshone dialect. The tribes in the historic Southern Plains group thus appear to connect in origin with others in or beyond the Rockies. Even facially the Kiowa and Comanche resemble the Apache. This may or may not be due to common heredity. It certainly holds for the physiognomic expression, which argues a similar life.

---

[37] Same, 17. [38] Same, 16, 17. [39] Same, 18, 19. [40] Same, 25. [41] AA 16:447–505, 1914.

The Comanche seem not to have appeared in their historic habitat until about 1700. This lateness corresponds with the close similarity of their dialect to that of the Wind River Shoshone. These people, in turn, live in an area which belongs to the Rocky Mountains physiographically, with the Basin vegetationally: it is sagebrush, not grassland. Wind River culture must have been of pretty pure Basin type until the horse came in and they began to take on an overlay of Plains culture. It was about this time, apparently, that the Comanche moved south from them. The Comanche are much better known historically than ethnologically. A monographic study of them is perhaps the greatest desideratum, next to the publication of the full Murie Pawnee materials, in the general Plains area.[44]

The ecological environment, especially of the Comanche, is not uniform. They extended from the true plains into desert savanna and scrub timber (maps 2–5), which again suggests a remnant of habits preceding their adoption of horse-bison culture.

### 5b. *Northern Plains*

This is the area of the culture whose rapid and expansive development within the historic period has brought about the current concept of a large "Plains" culture area. Wissler considers that eleven tribes manifest the typical culture of the "Plains." Three of these are in the Southern area just discussed. The other eight are the Sarsi, Blackfoot (including Piegan and Blood), Atsina, Arapaho, Cheyenne, Crow, Teton Dakota, and Assiniboin. These in fact are the eight, or perhaps seven without the Assiniboin, which I would reckon as constituting the valid Northern Plains group. It was among them that the Sun dance apparently originated and certainly flourished most exuberantly.

There is a good deal of evidence of flow into the area. The Sarsi are obviously a northwest Athabascan tribe that left its kinsmen in the forest to attach themselves to the Blackfoot. The Crow are linguistically closest to the Hidatsa. They look, therefore, like an agricultural group that had early ventured to give up farming for the plains life—probably even some centuries before they got horses. The Assiniboin speak a Yanktonai (Prairie) Dakota dialect. The Teton Dakota, according to Mooney, did not begin seriously to push west of the Missouri until about 1750.[45] For the Cheyenne there are traditions as well as records[46] of movement from the prairies into the plains.[47]

---

[42] The difference will perhaps prove to be partly due to relative absence in the south of antecedent porcupine-quill embroidery.

[43] J. P. Harrington, AA 12:119–123, 1910. Mooney and Harrington may both be right, the tribe being southern in origin but having temporarily moved north and then south again, legend retaining only the last of the events. Mooney has them in contact with the Spanish frontier of New Mexico in the first half of the eighteenth century, in the Black Hills about 1775, on the North Platte in 1805. He puts a residence on the headwaters of the Missouri earlier than any of these habitats, but it may have fallen between the first and second.

[44] Fortunately this is no longer true. G. Wagner has made such a study, and so has a Laboratory of Anthropology party under Linton.

This leaves only the Arapaho-Atsina and Blackfoot-Blood-Piegan without known indications of entry into the area. These groups are both Algonkin, but of speech highly diversified, as well from each other as from the great body of Algonkin; much more so than Cheyenne. Differentiation of such strength does not generally occur in languages that remain in geographical contiguity and intercommunication with the parent stock. It does often proceed with rapidity in languages that are subjected to contacts principally with alien idioms.[48]

---

[45] The lateness of this date may possibly be somewhat exaggerated, but the statement seems to be essentially true. Grinnell (passage cited in next footnote) would make the date even later—after 1800.

[46] G. B. Grinnell, The Cheyenne Indians, 1:1–46, 2:382–384, 1923, has collected a mass of material. He holds, no doubt with reason, that the Cheyenne did not move as a unit, but by villages and bands, which successively caught up with or overtook one another; that some of them farmed until well after 1800; and that they met (reunited with) the Suhtai or Sutaio only after they had crossed the Missouri, in the Black Hills country. The farthest eastern point possibly attributable to the Cheyenne, but not authenticable, is Mankato, Minnesota. This is in timber, just east of the prairie. Yellow Medicine River (a tributary of the Minnesota) in southwestern Minnesota seems fairly authentic as a habitat, and already lies in prairie. Then follow the area west of Lake Traverse in South Dakota, the head of Maple Creek (western affluent of the James), and Sheyenne River (western tributary of the upper Red River). The last two are in North Dakota, and all three in prairie. All habitats from here on lie in short-grass plains. Next follow both banks of the Missouri, in the region of the mouths of the Cannonball, Grand, Owl, and Big Cheyenne rivers; thence up these rivers to and beyond the Black Hills, that is, the country to north and east of these mountains back to the Missouri. This was the main habitat in the period around 1800. Except for temporary movements of bands, there seems to have been no general drift to or south of the Platte until about 1826. Even this drift applied to only part of the tribe, since the division into Northern and Southern Cheyenne began as late as about 1830. Early enemies were the Assiniboin and Crow; friends, the Dakota, Mandan, and Arikara. In the Black Hills region the Cheyenne were associated with the Arapaho, Kiowa, and "Comanche." So far Grinnell. The Black Hills evidently provided on a minor scale the same sort of advantages of shelter, fuel, and small game as the foothills of the Rockies supplied to the early tribes of the western plains. The total Cheyenne migration was about four hundred miles, with a transient bend northwest at the beginning to include part of the Red River Valley but in the general direction of west; until the due south swing after the first quarter of the nineteenth century. Even in their earliest determinable habitat the Cheyenne were separated by Siouans (Assiniboin, Dakota, Iowa) from all Central and Eastern Algonkins (Cree, Ojibwa, Sauk, Kickapoo, Illinois). The upshot is: a prairie-farming people, separated and well differentiated from their ancient woodland kinsmen, yielding very hesitantly to the lure of the western bison after they had horses in the eighteenth century, and not wholly committing themselves to the "typical Plains" culture until well into the nineteenth.

[47] Cheyenne speech is much closer to Central-Eastern Algonkin than is either Blackfoot or Arapaho. It is much more different, however, than it could have become during a separation of only two or three centuries. The purely linguistic inference thus is that the Cheyenne, though recent in the plains, lived, before that, somewhat apart from the Central Algonkins of the woodland; therefore most likely in the prairies. This tallies with the historical inferences in the last preceding footnote.

[48] This does not necessitate that form or even content is borrowed. It seems that the stimulus of alien contact is often sufficient to set up new processes, which go their own way. If taking over of vocabulary also occurs, it is evidently due to cultural rather than linguistic causes. The outright borrowing of grammar on any considerable scale is a putative phenomenon whose actuality remains to be proved.

If the Arapaho and Blackfoot drifted to the base of the Rockies a fairly long time ago, we should have them fulfilling all the geographical and historical conditions which in theory would be needed to account for their set-off linguistic status. Moving them into their recent habitat since the introduction of the horse, or even a century or so before, would not allow time for the existing degree of diversity, according to all authentic precedent on the rate of alteration of speech. We may therefore regard these two groups of tribes as ancient occupants of the northern true plains, or rather of the foothills of the Rockies and the plains tributary thereto. The Blackfoot made much use of the mountains in the historic period; like the Mountain as distinct from the River division of the Crow. It cannot be asserted that the Blackfoot and Arapaho groups were the only ones formerly in the northern plains. They are the only ones who we can be reasonably sure were there. The Crow may have been with them. There may have been other tribes who have since disappeared or been expelled or absorbed. The Sutaio among the Cheyenne might possibly have been the remnant of such a group.

Of the seven Teton subtribes, the Oglala seem to have been culturally the most vigorous in the nineteenth century. They were also the advanced outpost in the southwestward push away from the old Dakota prairie-and-forest habitat. This coincidence is evidently significant of the recent growth of cultural intensity in the plains proper.

The Northern Plains subarea is one of short grass, with grama and buffalo grass characteristic.[49] It covers substantially all this short-grass territory except for parts within the Southern Plains and Village Prairie subarea. The stream bottoms contain cottonwood growth nearly but not quite to the Rockies. On the west, the short grass generally abuts on mountain pine.

The one region in which the buffalo grass changes to sagebrush is in Wyoming. Here were the Wind River Shoshone. Their country is mostly open plains lying behind outlying broken ranges of the Rockies and draining through the Big Horn, Powder, and North Platte into the Missouri. But it is sagebrush-covered, like the habitat of all the Shoshoneans in the Basin.[50] This is an unusually neat instance of ecological conformity. The Wind River Shoshone, in other words, belong to the Great Basin culture, with a recent veneer of Northern Plains culture. Wissler virtually recognizes this—although he includes them and the Ute in a western border division of his Plains area[51]—when he mentions their basketry, mat houses as well as tepees, greater use of deer and small game and seeds than of bison, and half-hearted Sun dance.

The natural or ecological boundary between Northern and Southern Plains may be conjectured to have lain nearly at Pike's Peak and just north of the

---

[49] Shantz and Zon, 18.

[50] The Northern Arapaho, in governmental times associated with the Shoshone on the Wind River Reservation, are known as "sagebrush people" among the former and present Arapaho divisions.

[51] 1922, p. 220. His map includes in this western "Plains" border, Gosiute, Bannock, Flathead, with Nez Percé and Kootenay on both sides of the boundary. His 1914 map leaves Kootenay, Flathead, and Nez Percé in the Plateau, but comprises the Bannock, Gosiute, and even Southern Paiute in the Plains. The Sarsi are mentioned in both publications as among the typical tribes constituting the culture center, but are not so indicated on the map.

Arkansas headwaters. From here south, the Shantz-Zon map shows a belt of piñon-juniper woodland—a characteristic Basin-Southwest association—intervening between the grassland and the pine forests of the higher mountains. To the north, the forest meets the plains, except where the sagebrush extends out into the level land in Wyoming. If this ecological indication held for human occupation, the southern limit of the Cheyenne and Arapaho should have lain a little farther north than is shown by the map, which is based on Mooney's reconstruction for 1832. If the upper Arkansas at an earlier time could be attributed to the Kiowa or some other Southern Plains tribe, the ecological-cultural fit would be exact.

On the northeastern flank of the plains, Wissler recognizes the Plains Cree, Plains Ojibwa, and perhaps part of the Assiniboin as possessing many traits of the forest tribes.[52] A glance at the map shows the first two as mere border fragments of the great northern forest Cree and Ojibwa groups. Both are said to have pushed westward in the historic period, at the expense of Athabascans and Dakota. Their entry into horse culture was probably part of the same movement. The Cree and Ojibwa moved out into tall grass or prairie or poplar savanna, however, not into the true plains, and seem never to have lost contact with the woods and their kinsmen therein. The people whom they crowded were the Assiniboin. Even at that, half or more of the territory credited on the map as remaining to the Assiniboin was in the prairies. The Assiniboin, then, are a people only partly in the true plains in the recent period, and perhaps not at all in them formerly. This is confirmed by their close dialectic affiliation with the Yankton-Yanktonai Dakota, who are a prairie people.

On the other hand, the Mandan, Hidatsa, and Arikara, the three "village tribes," farmed and built earth houses, but lived in the short-grass area. Their territories as shown on the map exaggerate the situation, since they are mostly hunting range. The settlements of the tribes lay on the Missouri, not far west of the prairie. Also, not far downstream, the prairie swings westward across the Missouri to take in most of the Niobrara. If the Mandan had come up the Missouri from a little farther than they have been traced,[53] or if they had come a short distance straight west, they would have come out of prairie. The Arikara, in the light of their close speech relationship to the Pawnee, may be assumed to have moved out of the prairie fairly recently. Here, then, we have something special: agricultural prairie tribes who entered the plains but retained their prairie culture. The cause is not clear, but it was evidently not the horse nor wholly the lure of the bison. It may have been hostile pressure from downstream or the east; or a mere experiment, before or after the horse. Certainly it was an only half-successful experiment once the neighboring tribes got their horse culture fully under way, if the rapid wasting away of the three village tribes after 1800 is an index. Also, the three village tribes did not need extensive farm land and planted in bottoms, so that it mattered little to them whether the rest of their range lay in short or tall grass.

---

[52] 1922, p. 222.

[53] The mouth of the White River, in South Dakota.

The true Plains areas, then, may be classified as follows:

5a. *Southern Plains:* Comanche, Kiowa (including the Kiowa-Apache).

5b. *Northern Plains:* Arapaho, Cheyenne, Teton Dakota, Crow, Atsina, Blackfoot-Blood-Piegan, Sarsi.

## 6. PRAIRIE AREAS

The prairie peoples are more difficult to classify than are those of the plains. Just as the prairie shades through river-bottom woodland eastward into parkland and deciduous forest, so with the culture. When the Northern Plains horse culture approached its nineteenth-century climax, reflexes from it penetrated the Prairie cultures, which were already crumbling under American pressure. General studies based on intensive ethnological field work deal almost wholly with Northern Plains tribes, virtually all of whom are monographed, whereas on the Prairie side there is practically but one—the Omaha.

Roughly, the Prairie tribes correspond to the fourteen agricultural ones listed by Wissler as on the eastern "border" of the heart of the "Plains" area.[54] From these, however, the Wichita must be eliminated; the Osage, as already mentioned, are doubtful as a timber people with possible Southeastern leanings; Pawnee culture seems sufficiently distinctive to warrant its being set apart, as discussed under the Caddo. With the Osage counted in, this leaves twelve Prairie tribes or tribal associations, all of them Siouan with the exception of the Arikara. These may be subdivided into three groups: one ("Center") consisting of the Santee and Yankton-Yanktonai Dakota; a second ("Village"), of the Mandan, Hidatsa, and Arikara; and a third ("Southern"), of the southern trans-Mississippi or so-called "Central" Siouan tribes.[55]

Still farther north and northwest are the Assiniboin, Plains Ojibwa, and Plains Cree, already mentioned as not in the short-grass plains. The prairie here swings westward at the expense of the plains. Probably all Ojibwa and Cree were timber people in native times. The fur trade and firearms stimulated them to flow westward, the Cree penetrating far into Athabascan territory. Some got out into the plains with the horse and stayed there. These are our Plains Cree and Ojibwa. The Assiniboin, too, seem to have flowed westward when they got horses.[56] It was evidently from them, and possibly from the Blackfoot, that the Cree and Ojibwa bands who had spilled into the open prairie got their tepees and other elements of "Plains" culture, while the more westerly of the Assiniboin in their turn were being affected by the active culture developing on the northern true Plains. This northernmost prairie area is therefore in its cultural history directly marginal to the woodland, perhaps more dependent on it than are the prairie areas to the south. Moreover, the forest to which it clings is coniferous and unfavorable to maize; that with which the more southerly prairie areas were in relation is deciduous and generally profitable under maize cultivation (map 27).

To the east of the central and southern Prairie areas lay two others which were in close relation with them: Wisconsin and Ohio Valley. The former is the wild-rice district west of Lake Michigan. It happens that we possess good studies of three groups in this area, the Menomini, Winnebago, and Sauk and Fox. Their culture shows marked resemblances to the Prairie culture. The Ohio Valley area seems less similar. This is surprising, for several reasons. The Wisconsin area was wooded; the Illinois and northeast Indiana parts of the Ohio Valley area were prevailing prairie. Illinois lies between Wisconsin and the Southern Prairie area. Part of the Santee group of Dakota lived in the forested wild-rice area. It might therefore be expectable that the Central (Dakota) Prairie affiliated with Wisconsin, the Southern (Dhegiha, Chiwere) Prairie with Illinois; which seemingly is not what occurred. The legendary movements of the Dhegiha and Chiwere down and out of the valley of the Ohio would raise similar expectations. The factors concerned with these anomalies will be touched upon again in connection with the Illinois-Ohio area.

---

[54] The American Indian, 1922, p. 220.

[55] "Central" with reference to the stock as a whole, "Southern" with reference to the current concept of the Plains area.

[56] Boas, BAE–R 41, map, carries their territory before 1800 westward up the Saskatchewan and Athabasca rivers to the Rockies.

It is, however, clear that the prairie cultures three hundred years ago were connected more closely with the woodland ones to the east than with those of the plains on the west. Their bison hunting and tepees and travois were ancillary. Many parts of the prairies contained a fair amount of woodland; some of the tribes reckoned as of the prairie group actually lived rather in the forest; and one of the woodland culture areas was part prairie. The tall-grass tracts, in short, were culturally associated with the woodland; no doubt because the basis of both culture and subsistence had been worked out in prevailingly wooded territory, with agriculture. When bison exploitation through the horse developed a new primary subsistence type on the plains and caused a culture with new emphasis values to evolve there, the prairie tribes were affected because their habitat was sufficiently similar. Previously, the similarity in ecology had counted for less because the true plains were too extreme an environment for the thriving of cultures evolved in and primarily adapted to a generally wooded habitat and following farming.

The situation in the Prairie area, then, is this:

6a. *Southern Prairie or "Central Siouan" subarea:* Kansa, Missouri, Oto, Omaha, Ponca, Iowa, perhaps Osage; Pawnee a separate unit with Caddo-Southeast relations. Deciduous park and bottom land; settlements and farms usually attached to this; houses earth covered; patrilineal, exogamic, totemic sibs and moieties, spatially grouped in theory; Sun dance mostly absent; well-defined tribes; noticeable resemblance to Wisconsin area culturally.

6b. *Central Prairie subarea:* Santee and Yankton-Yanktonai groups of Dakota. Affiliations of closely related ethnic groups, or tribes expanded into quasi confederacies still loosely cohering; social organization loose; resemblance to Wisconsin tribes in subsistence habitus rather than formal culture.

6c. *Village Prairie subarea:* Mandan, Hidatsa, Arikara. Compact village tribes, with earth lodges in palisaded enclosures, in the historic period in the plains rather than prairies, some of them matrilineal; agricultural; possessing age-graded societies; evidently an islet detached from its former habitat and cultural affiliations; of composite origin, Mandan and Hidatsa belonging to different Siouan divisions, and Arikara being Caddoan.[57]

---

[57] The historic nucleus is undoubtedly Mandan-Hidatsa. Arikara speech is practically Pawnee. They must therefore be a recent Pawnee offshoot. Joining the Mandan and Hidatsa, they became somewhat assimilated to them, and probably even more associated in the minds of travelers and ethnologists than in fact. For instance, they have no age-graded societies.

6d. *Northern or Canadian Prairie subarea:* part or most of the Assiniboin, and Ojibwa and Cree recruits—Algonkin timber people and a Dakota offshoot driven by Dakota hostility into Algonkin affiliations. Prairie adjacent to northern coniferous forest and poplar parkland, draining into the Arctic instead of the Mississippi; eastern relations closest with peoples who farmed little or not at all; late strong superficial influences from the Northern Plains.

## SUMMARY OF TRIBAL HISTORY IN THE PLAINS-PRAIRIES

The outlines of tribal history in the plains and prairies, before the first Caucasian influences made themselves felt, say about three to five centuries ago, may be tentatively reconstructed as follows.

On the west, a series of tribes lived in the foothills and broken country in front of the Rockies, utilizing also the ranges behind and the plains before them, according to season, occupation, and need. Their primary cultural affiliations are likely to have been Intermountain. They consisted in the south largely of Athabascans. The Kiowa may have been among them, or northward. Still farther north, where the lower timber is pine instead of juniper or scrub, were Algonkins representing two drifts, both ancient, but the Arapaho-Atsina older and probably more southerly than the Blackfoot. The Sarsi may not yet have come out of the northern woods to join the Blackfoot. The Crow may already have left the Hidatsa to live at the foot of the western mountains; but this shift may not have taken place until somewhat later. In the sagebrush plains of Wyoming, behind the Laramies and Big Horns, and perhaps in the mountains to the north, were Shoshone.

On the south, Caddoan groups extended up the Red and Canadian rivers far enough, probably, to abut, in the seasonally visited short-grass plains, on the Athabascans. South Texas groups like the Tonkawa were perhaps too predominantly a woodland or scrub-timber people to participate with much importance in these contacts. Of the Caddoans, the Pawnee-Arikara branch had begun to drift northward, perhaps had already passed out of the woodland of Oklahoma-Arkansas-Missouri into the timber-streaked prairies of Nebraska, but maintained successfully the essentials of their rather complex culture.

On the east there were mainly Siouan tribes. The Chiwere group—Iowa, Oto, Missouri—clung most rigorously to the woodland. The Dhegiha, if not already divided, split soon after, with the Quapaw and Omaha-Ponca as extremes: the former hugging the forested Mississippi, facing southward, and reintegrating more closely with the Southeast-Lower Mississippi culture; the latter ascending the Missouri, trending westward into more open country, and beginning to diverge from their old woodland culture. The Mandan and Hidatsa were already in the open, perhaps less far north than later and still cultivating prairie rather than plains soil. Their specific tribal histories were diverse though roughly parallel and later joined and assimilated. The basis of their culture may have been southern—Pawnee-Caddo—in type, more than eastern—Central Siouan. They had perhaps been detached longest from the central body of the Siouan stock. North of the Chiwere were the Dakota: the Teton probably in timber-interspersed prairie, the other divisions mainly in the woods. The Assiniboin perhaps had not yet begun their quarrel with the other Dakota which ultimately led them into a separate history. Somewhere in the vicinity, more or less west of the Dakota and south of the Assiniboin, and presumably in prairie, are likely to have been the Cheyenne, already detached from the main Algonkin body in affiliations and probably in territory, and not yet in serious contact with Arapaho or Blackfoot across the other side of the plains. Cree and Ojibwa were still wholly woodland peoples.

Some of these situations and conditions may of course have fallen earlier than others. It is impossible to assign any precise date for most of them. The intent is only to present the general pre-Caucasian picture.

In the seventeenth century the horse began to come in; at first locally, and with little influence. By 1700 it had definitely affected some tribal cultures. By 1750 it had become in some measure universal,[58] and the historic plains-bison culture was getting into full swing. By 1800 it was flowing vigorously out of the plains and heavily overlaying both the Prairie and the Intermountain cultures, and even the margins of the Southwest. The peak may have been reached only as late as the early or middle nineteenth century.

As soon as the horse made the plains desirable, a drift into them began from all sides. Contributing factors along the eastern front, at least locally, were the pressure of white encroachment, of tribes equipped with firearms, the westward shrinkage of the bison. Thus tribes that had previously met only at long range, perhaps not at all, were thrown into close and often intimate contact: the Teton and Cheyenne with the Arapaho and Blackfoot, for instance. The Arikara moved northwestward until they found a stay with the likewise sedentary Mandan and Hidatsa. Roughly about these village tribes there revolved the greatest turmoil of new contacts, clashes, readaptations, and impartings. To these changes the villagers contributed, and they were not uninfluenced by them. As old settlers, they were not torn from their anchorage of maize fields, pottery, domed houses, palisades, matrilineate. But they became an increasingly smaller factor in the total situation as the new growths flourished around them. Farther south, the Pawnee, a larger unit, perhaps effected a better adaptation, except for earlier demoralization by white contacts. Still farther south, the prairie narrows, and the culture of the woodland peoples had been too much undermined by French and Spanish contacts and conflicts for them to be able to shape anything notably novel. About 1700 a large part of the Shoshone broke away from their Wyoming sagebrush, followed the front of the Rockies southward, and, as the Comanche, drove the eastern Apache back into the mountains or the Texas scrub, confirming them as marginal Southwesterners instead of the dominant southern Plainsmen which they might otherwise have become. In the far north, Cree and Ojibwa bands were evidently among the last tribes to try to enter upon a plains-prairie type of career.

Of rituals, the Sun dance evidently represents a relatively recent development in the plains proper, which flowed eastward into the prairies with diminished intensity, and crossed the Rockies late and to a still less degree. Whether the Sun dance is an agglomeration around an old Arapaho nucleus, or whether this people merely were the most active syncretists for a century or two, is harder to say. Age-graded societies appear to date back to the older stratum of culture among the village tribes and were taken into the historic Plains culture by only a few groups that had long lived in or at the edge of the plains proper. The history of the ungraded society type of ritual organization is more obscure, but the region of development apparently was the southern prairies.

---

[58] F. Haines, The Northward Spread of Horses among the Plains Indians, AA 40:429–437, 1938, gives the latest data, which roughly confirm my generalization.

The bison was exterminated by the Caucasian with Indian aid. Whether the Indian alone, but equipped with horses and guns, could have lived indefinitely off the animal, is an open question. It is entirely conceivable that even then he might have destroyed the species in a century or so. Once the balance turns against an animal, its decline, at first almost imperceptible, is known sometimes to increase with almost incredible rapidity; especially has this been observed of game too large to seek hiding. Before the horse, difficulties of transport, water, and shelter in the plains allowed the Indian merely to nibble at the existence of the bison, so that the perpetuation of the species might have gone on indefinitely. It might easily have been different, however, with a very similar species in a different habitat; say the foothills of the Rockies, which lacked, so far as purely native culture was concerned, the inhospitability of the open plains. A species adapted to such an environment might have met the fate of the historic buffalo of the plains almost as quickly in native times, once certain groups centered their subsistence on it. And such an event could as well have occurred a hundred as a thousand or ten thousand years before Columbus. That the Folsom bison belongs to an extinct species is, of itself, no reason for placing its human hunters into a past geological age. In its foothill range this animal might have been exterminated at a relatively late period by the very same populations whose descendants, with the help of horses, guns, and white men, terminated the plains bison. And with the animal gone, their culture would have had to end by altering or betaking itself elsewhere, thus perhaps appearing also to be more ancient than it really was.

## 7. WISCONSIN OR WILD-RICE AREA

West of Lake Michigan in Wisconsin, and extending northward to Lake Superior to include adjacent parts of Michigan and Minnesota, there lived at the beginning of the historic period an unusual number of tribes: the Siouan Winnebago and some of the Santee Dakota; and the Algonkin Menomini, Sauk, Fox, Kickapoo, Potawatomi and Mascouten,[59] and probably some of the Ojibwa. The Mascouten lost their identity, the Kickapoo and Potawatomi drifted or were driven out, the Sauk and Fox after a turbulent career moved into the central Siouan prairie; but the Menomini and Winnebago stayed and retained their numbers and old culture with unusual success, and the Ojibwa pressed increasingly into the northern part of the area.

The general vegetation maps fail to show the cause of this concentration of population. They give the area as part deciduous, part coniferous forest, with patches of prairie. The coniferous forest is more of the pine type characteristic of the upper Great Lakes than of the spruce-fir association that predominates in the northern transcontinental belt (map 4). Much of the region evidently was covered with a mixture of pine and of the trans-Ohio and Mississippi type of oak association. Livingston and Shreve (map 5) designate most of it as evergreen-deciduous transition forest. As prairie was also present, this was a favorable enough native habitat; but not in any way extraordinarily so in its prevalent plant cover. It was not decisively superior, for instance, in general features to Michigan and Indiana, which were much more thinly populated.

---

[59] Some of these Algonkin tribes are said to have been originally between Lakes Michigan and Huron, but even if so, they were established on the Wisconsin side when the French reached them about the middle of the seventeenth century.

The cause of the population density, then, obviously, so far as it was environmental, lay in something which the general vegetation classifications do not represent; and this was wild rice, *Zizania,* whose utilization Jenks has discussed.[60] He estimates or quotes the Indian population of the wild-rice district, defined much as at the opening of this section, as 44,500[61] in 1764, that of Michigan, Illinois, Indiana, Ohio, and southern Wisconsin as 31,750. For 1778 the comparative figures are 32,000 and 14,150; for 1822, 20,485 and 24,158. *Zizania* has a wide distribution, and its importance in the region in question must be due to cultural patterning as well as unusual abundance; but it clearly was a subsistence influence of the first order. Jenks believes that the supply becomes quickly exhausted, and that systematic use of the grain therefore could have begun only a short time before the first entry of the whites. However, with rice as a staple plus a fairly favorable mixed general plant cover, the area clearly has been utilized as a favorable Indian habitat since at least the sixteenth or seventeenth century. (It may have been so before. The prehistoric mound district of Wisconsin and the historic wild-rice district overlap, though they lie partly south and north of each other. See map 15, p. 102 below.)

The heart of the area was the Menomini-Winnebago-Sauk-Fox region bordering on central Lake Michigan. This is a district more favorable to agriculture, on account of a longer growing season for maize (map 27), than any to the west, and of course to the north. Physiographically (map 7), this same region around Green Bay and Lake Winnebago is reckoned as part of a rather uniform area extending through southern Michigan and Ontario to central New York, the "Eastern Lake section" of the Central Lowland. Immediately west lies the section called Wisconsin Driftless—and therefore relatively lakeless and riceless. The east Wisconsin heart thus added to the rice of other parts of its area a topography similar to that of favorable eastern regions, plus farming possibilities superior to those of other districts in its latitude.

The cultural affiliations of the area to the Central and Southern areas have been mentioned.

## 8. OHIO VALLEY

This is the area of the drainage of the Ohio, plus Illinois and perhaps most of the southern peninsula of Michigan. In general, this stretch was as thinly populated at the opening of the historic period as the wild-rice district was densely settled. Parts of Ohio, Kentucky, and West Virginia are regarded as having been uninhabited. The Illinois held Illinois; the Miami group, Indiana; the western Shawnee, parts of Tennessee and Kentucky. All three were Algonkin. The first two suffered heavily early in the historic area. The western Shawnee moved northeastward across the Ohio. Delaware, eastern Shawnee, Huron, Kickapoo, Potawatomi drifted into the same general region of Ohio, Indiana, and Michigan in the eighteenth century. In other words, this previously almost empty tract became a temporary refuge for tribes from all the surrounding regions (except due west) who were pressed by white or Indian enemies. That they made a stand here for nearly a century, and some of them held or increased their numbers, proves the habitat a potentially favorable one, and indicates that it was in a temporary depopulation when discovered. The legendary movements of the "Central" Siouans west across the Mississippi, and of the Delaware east across the Alleghanies, with the split of the Shawnee into two separated bodies, fall in with the concept of such a depopulation. So does the prehistoric Mound Builder culture, which definitely centers in Ohio drainage. In short, three stages are discernible in the history of this area: 1, relatively heavy numbers and an advanced culture of Southeastern affiliations, in Mound Builder time; 2, a scant population with an indecisive culture; 3, an inflow of tribes disturbed, directly or indirectly, by white contacts, and proceeding, temporarily, to evolve a partly new, assimilated, hybrid-Caucasian culture.

---

[60] BAE–R 19, pt. 2, 1900.

[61] The Wild Rice area figures include some Dakota.

This historic picture explains the chief causes of the apparently greater cultural resemblance of the Southern Prairie to the Wild Rice than to the nearer Illinois-Ohio Valley area. The latter, at its discovery, was in a slump; later, it became a refuge of tribes from elsewhere. Both Prairie areas and the Wild Rice area remained relatively unaffected by these fluctuations and retained their common elements, at any rate until affected by the horse and firearms.

Another factor probably is the sources of information. We have good modern ethnological studies of the Omaha, Winnebago, Menomini; not one of any earlier or later Ohio Valley tribe. With comparable data, this area, especially in its western part, might seem less aloof.

The Illinois would be particularly important to know something about in this connection, because their territory, and part of that of the Miami group, lay chiefly in prairie or parkland. Harshberger and Shelford designate most of Illinois as oak savanna, Livingston and Shreve as deciduous forest-grassland transition, Shantz and Zon as prairie with broad oak tongues following the streams (maps 2–5). There may actually have existed the closer cultural relationship of Illinois with the Prairie areas which the ecological similarity would suggest. An exact scrutiny, from the modern comparative angle, of all available data on the Illinois might conceivably transpose them from the Ohio to the Prairie culture.

It seems desirable, accordingly, for the early historic period, to divide this area into:

a. *Ohio Valley* proper: Western Shawnee, Miami, perhaps Potawatomi; later, other tribes.
b. *Illinois:* the Illinois.

The prehistory of the Ohio Valley must have been one of the most interesting as well as important in North America. Unfortunately, most of the archaeological work in this area has been done with rather little interest in broader culture-history problems. Consequently the rich data have been organized with reference to local interest, if at all, and when wider interpretations have been attempted they have been speculatively unsubstantial. As rich a culture as that of the Mound Builders must have embraced traceable variants of both district and period. The latter we cannot yet specify with certainty. Presumably the basis of the culture type as a whole was related to that of the Southeast; but on this there grew fairly notable local superstructures, which temporarily equaled or surpassed the Southeastern development. When the population, ethnic organization, and luxury culture growths decayed in the Ohio Valley, the Southeast reëmerged as dominant—perhaps was strengthend by the reflux. Some of the areas adjacent on other sides—Prairies, Wild Rice, Lower Great Lakes—also absorbed and retained some portions of Mound Builder culture, to their own enhancement. In the area itself, on the other hand, the destructive tendencies, once in the ascendant, seem to have run their full course, until the heart of the old Mound Builder region was a low-pressure spot, culturally and populationally. The legendary southwestward movement of the Dhegiha-Chiwere Siouans may have been part of one of the last phases of this period of evacuation and decay. It is tempting to think of the Mandan, Hidatsa, and Winnebago as similar emigrants; but it would be speculative to follow this idea out until a clearer picture of Mound Builder culture is available. At any rate, while Siouan tribes may have flowed out, by the time of discovery Algonkin ones had flowed in (or possibly remained), but in a thin layer, and, as an almost inevitable corollary, with a relatively uncharacterized, low-level culture.

There is of course no implication in the foregoing of anything mysterious or abnormally advanced in Mound Builder culture. Its type and level, as already said, were in general those of the early historic Southeast. But the size of some of the earthworks, their configuration, the quantities of copper and pearls owned in certain localities, the quality of some of the decorative art, all argue that the culture, whatever its origin or level, at one time enjoyed a transient florescence of rather high degree.

These matters will be reverted to in a subsequent section on Eastern archaeology.

### 9. LOWER GREAT LAKES

The Lower Great Lakes area coincides with the main or northern Iroquoian block of our linguistic maps. It takes in all the tribes of this territory: Iroquois, Huron, Tionontati, Neutral, Erie, perhaps Conestoga-Susquehanna. Except the last, these are all in middle St. Lawrence drainage, whose watershed defines the area. The territory is that of the St. Lawrence River itself except at its mouth—from about Montreal up, in the period of settlement; Lakes Ontario, Erie, and St. Clair; and the southeastern shores of Huron.

The area is a vegetational as well as physiographic unit: deciduous forest, in part with coniferous admixture, and shading in the north into prevailing evergreen. The several maps differ somewhat in their vegetation subclasses and in the allocation of these, but agree in regard to the general facts. It is noteworthy that the whole of what Malte calls the "Carolinean" province of Canada falls within this area. Even the most northerly tracts of the Lower Great Lakes area lie south of the great northern transcontinental coniferous belt. Their evergreens are hemlock and pine rather than the fir and spruce of the north.

The area is the heart of Otis Mason's St. Lawrence-and-Lakes ethnic environment, and one of the four subareas of Wissler's Eastern Woodland.

Besides speech, culture is fairly differentiated. It is marked by emphasis on institutional rather than religious or technological developments: consistent matrilineate, strongly functioning sibs, a tendency to coördinate and organize these as well as tribes into functioning quasi-political bodies. The Iroquois league was the most successful in historic times, perhaps largely owing to accidents of Caucasian relations. The purely native basis of this league was present in the other Iroquoian confederacies, and lagged little if any behind the degree of development of the Southeastern confederacies. In material culture there were Iroquoian specializations, none of a high order, in pottery, pipes, house types, and so forth; possibly a somewhat greater emphasis on farming than elsewhere in the same latitudes, on account of a somewhat longer and surer growing season (map 27).

Resemblances between the Iroquoian and Wild Rice areas seem not to be specific so much as due to elements and trends common to the whole region east of the Mississippi.

The position of the Conestoga is doubtful. Their habitat was in Middle Atlantic Coast drainage. They broke up so early that their culture is only sketchily known.

### 10–12. ATLANTIC COAST AREAS

As far north as the Muskogian tribes extended, a little beyond the Savannah River, the Atlantic coast can be assigned to the Florida and Southeast areas. Beyond, a new province is entered, as indicated not only by a change of prevalent speech to Siouan, but also by the lower degree of cohesiveness and size of the ethnic units and consequently less successful resistance to Caucasian encroachment; although it must be admitted that the English attitude toward natives was also less tolerant than that of the French and Spaniards. Probably for the same reason, they were far worse ethnologists, with the result that, the native life having long since been crushed, we know comparatively little of the Atlantic Seaboard cultures.

The whole region from South Carolina to the mouth of the St. Lawrence is fairly uniform as an environment except in temperature. The precipitation is much the same. There is neither high nor bold relief. The slope from the Appalachian ranges to the shore is of about the same width, and the length and size of the parallel rivers therefore approximately equal. The coast, being low and tempered by the ocean, has generally a more southerly type of plant cover than the piedmont, and this often differs in the same way from the Appalachian ranges. The vegetational belts thus stretch northeastward, and die away in a tapering strip as they meet the north-northeastward-trending coast. This is shown clearly on the Shantz-Zon map (no. 4), which carries finer distinctions of the plant cover than the others. The southeastern pine extends along the coast as far as Cape Hatteras; the piedmont pine-and-oak forest, to New Jersey; the oak-chestnut hardwood forest of both sides of the Appalachians, to Rhode Island; the birch-beech-maple-hemlock association, to southern Maine; then comes the northern spruce-fir—although with deciduous admixture, since from the Canadian point of view Malte (map 5) reckons everything south of the Gulf of St. Lawrence as "hardwood" in contrast with the great Subarctic evergreen forest beyond. It will be seen that there is variation from prevailing coniferous to deciduous and back to prevailing coniferous forest, without any sharp breaks, and with probably a preponderance of deciduous character—though this deciduous character is not so marked as in the region between the Appalachians and the foot of the Rockies. What is constant is the forest cover. There is some marsh along the shores; but no natural true grassland, even in patches of any considerable size.

As might be expected, a setting as uniform as this produced no sharply differentiated cultures. The chief differences are in the intensity and success of maize culture, as this depends on length of frostless summer and consequently on latitude and nearness to the sea; the resultant density of population; and relative distance from more advanced cultural centers, especially the Southeast. It will be convenient to distinguish three cultural provinces. One extends north to the Potomac; another to New Hampshire or southern Maine; the third lies beyond.

10. *North Atlantic Slope.*—This is an Algonkin area, containing the Abnaki and Micmac, perhaps also the Pennacook, and about coterminous with Maine, Nova Scotia, and New Brunswick. The culture was simpler than in the next area, in dependence on its nonfarming subsistence basis. Maize was grown, but only to a subsidiary extent, being at the limits of its cultivability.

11. *Middle Atlantic Slope.*—The Middle Atlantic Slope tribes were also all Algonkin. They were the southern and central New England tribes from the Pennacook south; the Wappinger and Mahican; the Delaware; and perhaps the Conoy and Nanticoke. Of these, the Delaware evince some traditional, linguistic, and cultural indications of a western, trans-Appalachian origin. The Conestoga-Susquehanna may have belonged with this area or in the Iroquoian Lower Great Lakes area.

The inclusion of the Pennacook is doubtful. The Handbook of American Indians inclines to group them with the southern New England Indians. Michelson's Algonkin linguistic map puts them with the Abnaki. Their historic affiliations since warfare with the English settlers in the late seventeenth century have been with the Abnaki. These affiliations may disguise an earlier leaning toward the south. The Conoy and Nanticoke may belong with the next area.

The culture of the Middle area was built around farming; but it was not one of intensive trends. If Mooney's computations are right, the population was rather denser than in the areas to the south and inland, and in the coastal stretch between New York and Boston it was heavier than anywhere east of the Rockies.

12. *South Atlantic Slope.*—This area includes the eastern Siouan tribes; a few Iroquoians, notably the Tuscarora and Nottoway; the little known North Carolina Algonkin; and the Algonkin Powhatan. Speck has set the latter off as constituting a distinct cultural subprovince.[62] The vegetation of their area is largely of piedmont type, although they lived in a tidewater district. The country of the Carolina Algonkin is one of swamp forest, marsh, estuaries, and wide, shallow sounds or bays. It is likely that they had modified the general culture of the region so as to make it accord with their special subsistence requirements. The rest of the area, that of the Siouan and Iroquoian tribes, is probably divisible into a Lowland and a Piedmont subarea, fairly coincident with the southeastern pine and oak-pine ranges of Shantz and Zon. Too little is known of the culture to press the validity of these subareas, though they may be provisionally listed as follows:

12a. Piedmont
12b. Lowland
12c. Carolina Sound
12d. Virginia Tidewater

On the whole, there is little to indicate strong specific influencing by the Southeast, although at the border culture probably shaded over continuously. Tribes as far south as the Catawba were in relations, though of hostility, with the Iroquois rather than with the Creeks. The Tutelo and Tuscarora sought refuge with the Iroquois. These facts indicate a northward outlook of the native culture—a sense of community along the Atlantic slope rather than with the Southeastern area. So, too, there is little trace of Mound Builder resemblances and influences; whereas as soon as Georgia is entered, these appear.[63]

Speck[64] classes the Powhatan culture definitely as Southeastern, and cites an impressive list of specific cultural resemblances. However, he analyzes the situation in terms of a contrast between a Muskogian-Siouan Southeast and an "older northern Algonkian" culture. He then has the Maryland-Virginia-North Carolina tidewater invaded by Algonkins from the north, who assimilate the Southeastern culture and pass some of it on to their northerly kinsmen as far away as New England. This is a hypothesis involving a combination of ethnic and cultural considerations. One would expect Virginia culture to be more similar than Massachusetts or Maine culture to that of Georgia. But it seems an undesirable simplification of the situation to explain it wholly in terms of two original, contrasting cultures of Creek and Abnaki type. There seems no specific reason for believing that such a cultural discontinuity existed more strongly in the prehistoric past than in early historic times.

---

[62] AA 26:184–200, 1924. He includes the Conoy and Nanticoke of Maryland with the Powhatan culturally. I have hesitantly put them with the Delaware in the Middle Atlantic Slope.

[63] The same. See also maps 15, 16, pp. 102 and 104 below.

[64] The same. Swanton, as cited in the previous section on the Southeast, holds the same view.

## 13. APPALACHIAN SUMMIT

The Cherokee are difficult to place. Their culture had hybridized through indirect Caucasian absorptions before their territory was seriously penetrated. It seems to have been a rather anomalous culture. Specific Southeastern traits are not strikingly to the fore. The impression that the Cherokee are Southeastern appears to be partly due to the similarity of their and the Creek historic fortunes. Both groups prospered in comparative peace with the British until about Revolutionary times, fought the Americans stubbornly, and underwent analogous social and organizational transformations and removals to Indian territory. Nor do the Cherokee seem to show specially close relations with the Ohio Valley people nearest them, the Shawnee; with the Siouan tribes of the Atlantic slope; nor with their Iroquois kinsmen in the north.[65] Their situation evidently accounts for this aloofness. They occupied the southern and highest part of the Appalachian system, where this ends rather abruptly and falls into the piedmont and plain of the Gulf slope (map 17, p. 121). They are, with the possible exception of two or three obscure eastern Siouan tribelets, the only native people in the eastern United States that lived in a true mountain habitat. Their settlements, of course, were in the valleys among and about the mountains. But the way in which these settlements and the claimed territories clustered around the massif shows that this was the dominant element in their relation to the landscape. Among other eastern tribes, mountains were incidents, borders, hunting grounds, or waste areas in their territory; among the Cherokee, the mountains were the structural backbone of their habitat. The higher parts of their land have a vegetation cover characteristic of the latitude of central New York, with enclosed elevated islands of the type prevalent in Maine, according to the Shantz-Zon map (no. 4). It would be strange if the inhabitants of such a region resembled very closely those of the warm Gulf peneplain.

While it is difficult to allot the Cherokee primarily to one or another of the three areas surrounding them—Gulf Slope, Atlantic Slope, or Ohio Valley—this very difficulty brings out a fact that is probably of historical significance: the importance of the Appalachian system as a secondary line of culture cleavage.

## NORTHERN AREAS

The whole north of the continent except its shores and a belt of tundra is a great coniferous forest occupied by Algonkin and Athabascan peoples. These were perforce nonagricultural, the climate being subarctic and wholly unadapted to maize. Subsistence was therefore by hunting and fishing. As early as the seventeenth century the fur trade began to bring a readaptation, which spread gradually westward. It became more and more profitable for bands to become dependent on trading posts. They gave furs and received traps, firearms, tools, trinkets, and provisions. Their meager specific culture was therefore already affected when the first modern ethnological studies were made among them. On the other hand, the demand for furs encouraged them to maintain their hunting habitus. In the actual food consumption, flour and pork came to constitute a growing proportion; nevertheless, the long-run effect of Caucasian contacts was to entrench these peoples more firmly in their occupation as hunters. The interior of Alaska was the last region to be reached by these influences: in some of its parts the miners' irruption at the close of the nineteenth century was the principal factor that determined the new order. But in the main the transmutation proceeded rather uniformly over the whole region.

---

[65] Cf. Swanton BAE–R 42:712, 1928; though he classifies the Cherokee as culturally marginal to the Creek.

Underlying this recent uniformity was a considerable one of native culture, and, below that, of ecology. The northern forest is substantially one from Alaska to Newfoundland. Mason recognized the area as a unit definable in terms of this transcontinental coniferous belt. Wissler did the same when he set up the caribou food area; though he then proceeded to divide this between the Eskimo, Mackenzie(-Yukon), and Eastern Woodland culture areas. This scheme puts the Naskapi and Cree with the Iroquois and Winnebago, and Wissler has to set them off again in a northern subarea of the Eastern Woodland admittedly very similar in material culture to the Mackenzie area. The awkwardness of this classification is obviated and the true relations are probably best brought out if we follow Mason in basing culture on natural environment and subsistence.

A subdivision for convenience is provided by the line between Yukon and Mackenzie drainage and Hudson Bay and Atlantic drainage. This line approximately coincides with the somewhat fluctuating Athabascan-Algonkin boundary. Another division is made by the Height of Land which separates the Hudson Bay from the Great Lakes drainage.

### 14. NORTHERN GREAT LAKES

This is the area of the Ojibwa, Ottawa, and Algonkin proper as distinct from the Cree and Naskapi. It lies generally south of the Height of Land and drains into the Great Lakes and upper St. Lawrence. The Montagnais north of the lower St. Lawrence and Gulf should perhaps be included.

This area knew some agriculture, though this was nowhere primary in the subsistence. It was also exposed to direct contacts with the agricultural areas on the south. These circumstances set it off from the more northerly Algonkin area. There is an ecological correspondence which is shown on some but not all of the maps. Shelford, for instance (map 3), includes the present area in his Northern Coniferous Forest. Harshberger (map 2), however, sets off a St. Lawrence-Great Lakes area which extends north to the Height of Land. Malte (map 5) distinguishes a (Canadian) Hardwood Forest province, extending between Lake of the Woods and Nova Scotia, from the Subarctic (Coniferous) province. The other Canadian source (map 4) recognizes first a Mixed Forest, and then an Eastern Coniferous Forest astride of the Height of Land, before the true, transcontinental Subarctic Forest is reached. Wissler's map[66] of caribou distribution points the same way: in the main, the present area is outside the range of the animal. According to Malte, most of Montagnais territory would fall into the northern vegetation; which agrees with the dialect-group distribution, though cutting across the drainage.

---

[66] American Indian, p. 4, 1922; after Grant.

There has been a southwestward drift in and near the area. The Iroquoian Huron abandoned the St. Lawrence between French discovery and settlement. Montagnais, Algonkin, and Abnaki flowed in. Ottawa territory now is west of the Ottawa River. The Potawatomi, traditionally of one origin with the Ottawa and Ojibwa, have moved about Lake Michigan in the historic period. The Ojibwa are always represented as having gained ground from the Dakota. If the several statements in the Handbook of American Indians may be accepted literally, the prehistoric Ojibwa were wholly north of Lake Superior and Lake of the Woods, and their entry into the Wild Rice and Northeastern Prairie areas is recent. There seems also to have been a pushing of western Ojibwa northward into Cree territory rather late in the historic period, if the earlier references to the extent of Ojibwa territory can be taken at face value.

J. M. Cooper[67] gives the Algonkin groups between the St. Lawrence and Hudson Bay a distribution noticeably different from that of Michelson, Swanton, Skinner, the Handbook, and my map 1. He carries the Montagnais northwestward across the Height of Land to James Bay, so as to hold the whole of Rupert River and the lower parts of Nottoway, Eastmain, and Big rivers. They adjoin the Eskimo, and thus entirely cut off the Naskapi from the Cree. On the other hand, the Tête de Boule form a definite Cree island within Algonkin and Montagnais territory, more than two hundred miles east of any other Cree, and in St. Lawrence watershed. The Cree proper, Cooper has begin only at Moose River and stretch westward in a much narrower band than shown in map 1. For instance, on the Albany he puts them only below the Kenogami. Beyond longitude 90° or 92°, their southern limit is not shown. The territory between their southern boundary and the Height of Land he assigns to the Ojibwa, who extend eastward to the middle Nottoway River. The Abitibi he makes Ojibwa, not Cree. Cooper's line between Ojibwa and Cree coincides rather well with that in map 5 between the Eastern Coniferous and Subarctic forests.

## 15. EASTERN SUBARCTIC

This includes the various Cree divisions, the Naskapi, the Beothuk of Newfoundland, possibly the Montagnais. The Plains Cree represent a recent spillover from the forest into parkland prairie. The boundary of Cree against Athabascan has been somewhat arbitrarily set between the Nelson and Churchill rivers. This boundary the Cree have overflowed; and, wherever it originally lay, it has fluctuated in the historic period. Some of the Ojibwa have also worked northwestward. Skinner, for instance, puts the Northern Saulteau Ojibwa of today on the head of the Severn River.[68]

It is of interest to compare Michelson's classification of the Algonkin languages[69] with the cultural areas that have been reviewed.

The inference is that whereas tribes occasionally moved into an entirely new habitat, dialect groups tended closely to conform to the cultural-ecological groupings. Subsistence being the same, habitats inclined to remain uniform; this made for close associations, which in turn held speech together.

---

[67] Northern Algonkian Scrying and Scapulimancy, P. W. Schmidt Festschrift, 205–217, 1928; corroborated and extended by personal communication.

[68] AMNH–AP 9:10, 1911.

[69] BAE–R 28, 1912. The classification used is that given in the map, in which Swanton participated. The text classifies somewhat differently, with IV of the subjoined table split into a Central and an Eastern subtype. The Central subtype is made to consist of A1–2, 4–6, B, C, and D; the eastern, of A3.

Speck has recently made a valuable addition to our knowledge of Montagnais and Naskapi band distribution and Labrador Eskimo territory, with maps for two to three hundred years ago and the last century.[70] This study centers farther north and east than Cooper's account which has just been referred to, but on the whole agrees fairly well with it. Speck puts Montagnais and Naskapi into one group, as opposed to Cree, thus differing from Michelson's classification. The Eskimo have apparently receded, whereas Montagnais-Naskapi have advanced eastward and northward for several centuries.[71]

TABLE 4

ALGONKIN DIALECT GROUPS AND CULTURE AREAS

| Dialect groups | Culture areas |
|---|---|
| I. Blackfoot (markedly distinct) | Northern Plains (long resident) |
| II. Arapaho, Atsina (markedly distinct) | Northern Plains (long resident) |
| III. Cheyenne, Sutaio (more similar to IV) | Northern Plains (newcomers) |
| IV. Eastern-Central Algonkin | |
| A. Cree type | |
| 1. Cree, Montagnais*<br>2. Naskapi | Eastern Subarctic |
| 3. Micmac, Abnaki, Pennacook | North Atlantic Slope |
| 4. Menomini<br>5. Sauk, Fox, Kickapoo | Wild Rice |
| 6. Shawnee | Ohio Valley |
| B. Ojibwa type | |
| Ojibwa, Ottawa, Algonkin<br>Potawatomi* | Northern Great Lakes<br>Ohio Valley |
| Illinois, Miami | Ohio Valley |
| C. Massachuset type | |
| Southeast New England, Long Island | Middle Atlantic Slope |
| D. (Delaware type), position uncertain | |
| Mahican, Wappinger, Pequot, Delaware | Middle Atlantic Slope |
| V. Uncertain | |
| Nanticoke,* Conoy*<br>Powhatan, North Carolina Algonkin | Middle (?) Atlantic Slope<br>South Atlantic Slope |

* Indicates that inclusion in the cultural area indicated by me is not certain, but they are included by Michelson in the dialect groups shown.

## 16. WESTERN SUBARCTIC

This is the western half of the great northern coniferous forest. The limit toward the tundra is drawn somewhat variously; in many parts the forest becomes low or sparse, and of course disappears in the higher mountains. In general, however, the tundra is assignable to the Eskimo, even where it extends well inland. The Athabascan tribes whose territories consist mainly or partly of tundra appear to be the Hare, Yellowknife, and Caribou-eater. These, or at least the first of them, seem to constitute a cultural subarea. There are areas of tundralike formation farther west, as between the Mackenzie and upper Yukon drainages, and again in Alaska; but these, being due to altitude, may be regarded as mountain hinterlands of tribal territories otherwise more or less forested.

---

[70] Montagnais-Naskapi Bands and Early Eskimo Distribution in the Labrador Peninsula, AA 33:557–600, 1931.

[71] Speck has gone farther in Inland Eskimo Bands of Labrador, in Anthr. Essays, UC, 313–330, 1936. Of particular interest is a list of traits shared by Montagnais-Naskapi and Eskimo.

Toward the plateau and coast some border subareas have apparently to be set off. The Carrier in upper Fraser and the Babine in upper Skeena drainage have already been mentioned as of doubtful affiliation between the Fraser and the present region. The Tahltan and Taku-tine, back of the Tlingit, have been influenced by this people and appear in turn to have influenced especially the northern mainland part of the Tlingit. But they may tentatively be regarded as constituting an Athabascan or Subarctic subarea rather than a northernmost Intermountain one. The Tahltan are in upper coast drainage—on the Stikine; the Taku-tine partly on upper Yukon waters. Both are shut off from the farther interior by the Rockies. They should therefore show some differentiation from the other Athabascans. But as the primary ecological boundary admittedly comes at the Coast Range, they will probably have to be reckoned as in the main belonging culturally with the interior tribes. It may be added that most of the available plant-cover classifications (maps 2–5) agree roughly in assigning a Rocky Mountain type of vegetation to most of northern interior British Columbia. That is to say, the forest is Western Coniferous, not Northern.[72] The ethnic habitats involved in this plant cover are Carrier, Babine, Tahltan, and Sekani, in part or whole.

The tentative cultural classification is:

**16a. Western Subarctic, main area.**
**16b. Interior Tundra (Hare, Yellowknife, Caribou-eater).**
**16c. Upper Fraser (Carrier, Babine).**
**16d. Northern Plateau Apex (Tahltan, Taku-tine).**

### *Addendum on Western Subarctic*

Osgood has recently given a classification of all northern Athabascans[73] which is probably much better founded than my compilation as expressed in map 1. Besides the Sarsi, Nicola, Chilcotin, and Tsetsaut in the Plains, Intermountain, and Northwest Coast areas, he recognizes twenty-one main tribes or nations in my Western Subarctic area, grouped into Arctic Drainage and Pacific Drainage major divisions on the basis of culture.[74] The areas on his map often differ markedly from those of mine. New tribes appear, while some of those shown by me reduce to subtribes or bands. Though Osgood's essay is tentative, and will no doubt be modified in detail, it represents the first real attempt to organize ethnic knowledge on this vast area.

---

[72] The Dominion map (4) divides the Tahltan and Taku-tine territory between Northwestern Coniferous and Subarctic forest, the line beginning at about 59° on the Alaska boundary and extending northwestward.

[73] YU–PA no. 7, 1936.

[74] Jenness, Nat. Mus. Can. Bull. no. 65, 1932, classifies culturally into a Mackenzie-Yukon and a Cordilleran area, with the Kutchin somewhat in doubt.

*Arctic Drainage division*

Chipewyan. Includes my Caribou-eaters
Yellowknife
Dogrib: 4 groups
Bear Lake: 5 groups on Bear Lake
Hare, distinct from last, northwest of the lake, to west of the Mackenzie River
Mountain, 3 groups, west of Bear Lake, both sides of the Mackenzie
Slave, 4 groups, incl. Etchao-tine, on the Slave and Mackenzie rivers
Kaska, a large area on the Liard, west of the last
Sekani, upper Peace River, south of the last; 4 groups
Beaver, lower Peace River, east of the last, south of the Slave
(Sarsi, Athabasca River, south of the Beaver; in Plains culture)

*Pacific Drainage division*

Carrier, including Babine

Tahltan, including Taku-tine. Stikine and upper Taku rivers

Tutchone, a large area from 140° to the continental watershed, and including most of the Taku-, Abbato-, and Etchao-tine territories of map 1, on the upper Yukon affluents

Nabesna, on the upper Tanana

Han, on the Yukon, 64°–66° north latitude, comprise my Hun, but not Kutchin

Kutchin, from 130° to 150°, or from east of the lower Mackenzie to west of the middle Yukon. Elsewhere[75] Osgood gives the true Kutchin tribes somewhat differently from Cadzow, whom I followed in map 1: Nakotcho or Kwitcha, Tutlit, Takkuth, Vunta, Tranjik, Kutcha, Tennuth, Natsit. All other groups are denied as Kutchin, though they may have been so called.

Tanana, on the lower Tanana and a stretch of the Yukon, southwest of Kutchin

Koyukon, on the Koyukuk and lower Yukon. Include Yuna-khotana of map 1

Ingalik, Eskimo name, lowest Yukon and Kuskokwim: Kayu-khotana and Kalchana; also called Tena

Tanaina, distinct from Tanana: the Cook Inlet Athabascans, my Khnaia-khotana

Ahtena, Copper River

(Tsetsaut, head of Portland Canal: Northwest Coast)

(Chilcotin and Nicola, interior of southern British Columbia)

An included tentative linguistic classification by Sapir puts eighteen of the languages into nine North Athabascan groups or divisions, seven being left unclassified for paucity of data:

1. Chipewyan, Yellowknife, Slave
2. Dogrib, Bear Lake, Hare
3. Kaska and Tahltan, on both sides of the continental watershed
4. Sekani, Beaver, Sarsi
5. Carrier and Chilcotin
6. Kutchin, the most divergent speech of all
7. Tanaina and Ingalik
8. Ahtena, perhaps distinct
9. Tsetsaut, probably most divergent after Kutchin

Most of these divisions differ from one another as much as they differ from Navaho-Apache, it is stated. The New Mexico-Arizona Athabascans, and the Oregon-California ones, each constitute a single well-marked speech unit, to which each of the eight or nine or more northern ones is roughly equivalent in distinctiveness.

---

[75] AA 36:168–179, 1934.

These facts about speech suggest strongly that the North Athabascans have occupied their territory long enough to diverge heavily from one another. The separateness of Tsetsaut is not surprising: they were a small group among aliens on actual salt water. The Kutchin, however, are surrounded by other Athabascans, except on the north, where they adjoin the Eskimo. Either contact with these latter set up disturbances leading to strong specialization, or the Kutchin must presumably once have lived in less contact with their fellow Athabascans or in greater exposure to some alien people.

### Relations of Eastern and Northern Areas

It is an open question whether the Northern areas should be reckoned as part of the general Eastern tract or coördinate with it. They lie pretty solidly beyond the practicable limits of maize agriculture. This environmental condition has limited the population, stunted the culture, and kept it from making absorptions which otherwise would probably have taken place. It is in fact difficult to name traits specifically characteristic of the eastern areas proper which are also characteristically northern and limited to the two. Moreover, the door was ajar in the north to culture traits tending to seep in from subarctic Siberia: toboggan, snowshoe, birch-bark vessels, conical tent houses, cut and fitted clothing, scapulimancy (if not due to French Colonial import). These traits have generally worked across the continent throughout the subarctic or Hudsonian belt, but have not penetrated seriously the areas south of it, even where the environment permitted.

On the other hand, the Northern areas do not show even a tendency toward a cultural center or culmination, and the transition between them and the Eastern areas is gradual, except for changes resulting from the impracticability of agriculture. Thus there is nothing against considering the Northern cultures as primarily a meager and undifferentiated form of the Eastern cultures which center in the Southeast. On the whole, this seems best to express the relation.

### Eastern Archaeological Areas

On the side of pure archaeology there exist a number of distributional classifications which bear on the differentiation made in the foregoing pages between the Southeastern, Mississippi Valley, and Lower Great Lakes cultures, on the one hand, and those of the Atlantic slope, on the other.

*Thomas on mounds.*—The first of these classifications is Cyrus Thomas' work on mounds of the eastern United States.[76] In map 15 I have tried to embody his principal regional findings. Wissler has previously condensed Thomas' main map of mound occurrence.[77] My reduction is somewhat less summary, in that it attempts to show with reasonable accuracy every area containing six or more mounds or mound groups separated from one another by not more than fifteen to twenty miles; more scattering occurrences are omitted.[78] I have also added the watersheds between Atlantic, Mississippi, and Great Lakes drainages. Further, my map embodies the "districts" discussed by Thomas in his text, namely:

---

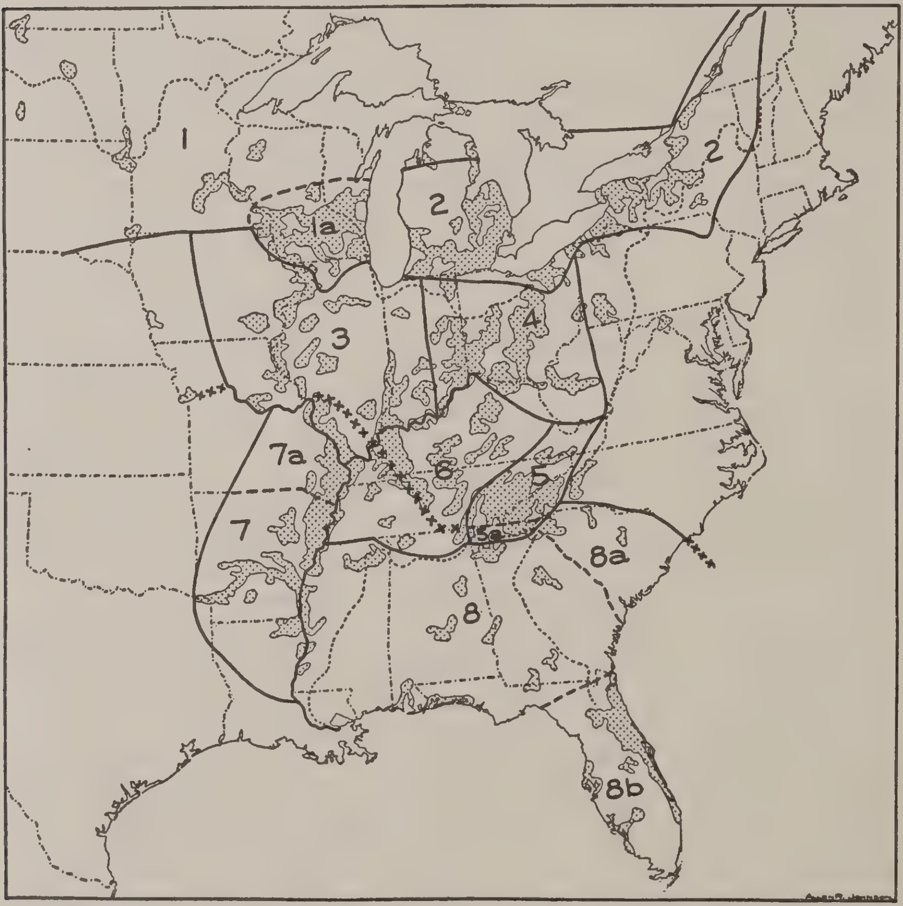
[76] BAE-R 12, 1894.

[77] The Relation of Nature to Man, 12, fig. 5, 1926.

[78] This map could have been added to, notably from the publications of Moore, but an exhaustive bringing of it up to date would be an exacting task, without, probably, much changing the general inferences to be derived from Thomas' work.

1, Dakotan (or Northwest) with 1a (Wisconsin), subdistrict of Effigy Mounds; 2, Huron-Iroquois, from Lake Michigan to Quebec; 3, Illinois, including adjacent parts of Indiana, Iowa, Missouri; 4, Ohio, including eastern Indiana, northeastern Kentucky, southwestern West Virginia; 5, Appalachian, about coterminous with historic Cherokee territory; 5a, North Georgia, transitional between the last, the Gulf area, and the next; 6, Tennessee or Central district, including most of Kentucky; 7, Arkansas, down to the Red River, with 7a, Southeast Missouri, as a subdistrict; 8, Gulf, from the lower Mississippi east, with 8a, South Carolina, and 8b, Peninsular Florida, forming probable subdistricts.

The delimitation of these districts is given somewhat unfortunately by



Map 15. Mound Areas of the Eastern United States; simplified from Thomas. Groups of six or more mounds or mound clusters within not exceeding fifteen to twenty miles of each other shown in stipple; smaller groups and isolated mounds omitted. Mound areas and subareas: 1, Northwestern (Dakotan); 1a, Effigies or Wisconsin; 2, Huron-Iroquois; 3, Illinois; 4, Ohio; 5, (South) Appalachian; 5a, North Georgia, transitional; 6, Tennessee or Central; 7, Arkansas; 7a, Southeastern Missouri; 8, Gulf; 8a, South Carolina; 8b, Peninsular Florida. Division between Northern and Southern major "sections" shown by xxxx. Atlantic, Gulf, Mississippi, Great Lakes, and Hudson Bay Drainage watersheds shown by dotted line.

Thomas in terms mostly of states or counties, but in general is reasonably definite. His classification is based primarily on the shape, structure, and function of the mounds themselves, but takes cognizance also of interments, pottery, etc. A basic classification by Thomas into a Northern and a Southern "section" cuts without explanation across some of the foregoing districts, southwestern Illinois and western Tennessee being thereby separated by him from the remainder of the Central district to go with the Arkansas and Gulf districts. This somewhat discordant major classification has been entered on map 15 by a line of crosses.

The following conclusions result from Thomas' work:

1. The Appalachian watershed formed an important line of cultural cleavage. To the east, mounds were of shell or other refuse. A few spillings of mound groups eastward over the physiographic boundary fundamentally confirm the division, because in the main these exceptions lie close to the boundary.
2. The Great Lakes and Gulf drainage went with the Mississippi Valley.
3. The lower Great Lakes were set off from the Ohio Valley as a separate district or area.
4. West of southern Lake Michigan was an area of concentrated and specialized mound culture. This was continuous across Wisconsin, without regard to the Lakes-Mississippi watershed, in contrast to the region east of Lake Michigan, where the watershed delimited cultural provinces.
5. The uppermost Mississippi mound culture extended in some degree to the Red River of the North and perhaps to the middle Missouri.
6. The western frontier of the intensive mound culture was approximately the edge of the forest, though in the north the mounds, and in the south the woodland, extended somewhat farther west. The prairie areas of Illinois and Indiana (map 4) were comparatively moundless.
7. The heart of the mound area was the Ohio drainage, together with the immediate valley of the lower middle Mississippi.
8. The characteristic mound culture thinned out downstream, according to Thomas, coming to an end about Natchez. Lower Louisiana and coastal Texas are represented as outside the culture. This conclusion, however, can no longer be maintained.[79]
9. The eastern Gulf states affiliated with the Mississippi-Ohio area.
10. This Gulf Drainage culture extended into the southerly part of the Atlantic slope, perhaps as far as the Great Pedee, though its most characteristic form ended at the Savannah.
11. Peninsular Florida—the whole peninsula, not its southern half only—formed a distinct subarea.
12. Another distinctive subarea was the South Appalachian district, the intermountain region of upper Tennessee River drainage.

Except for the slump in the Ohio Valley from prehistoric to historic time, this archaeological classification agrees well with the ethnological one developed in the present work, even to many details.

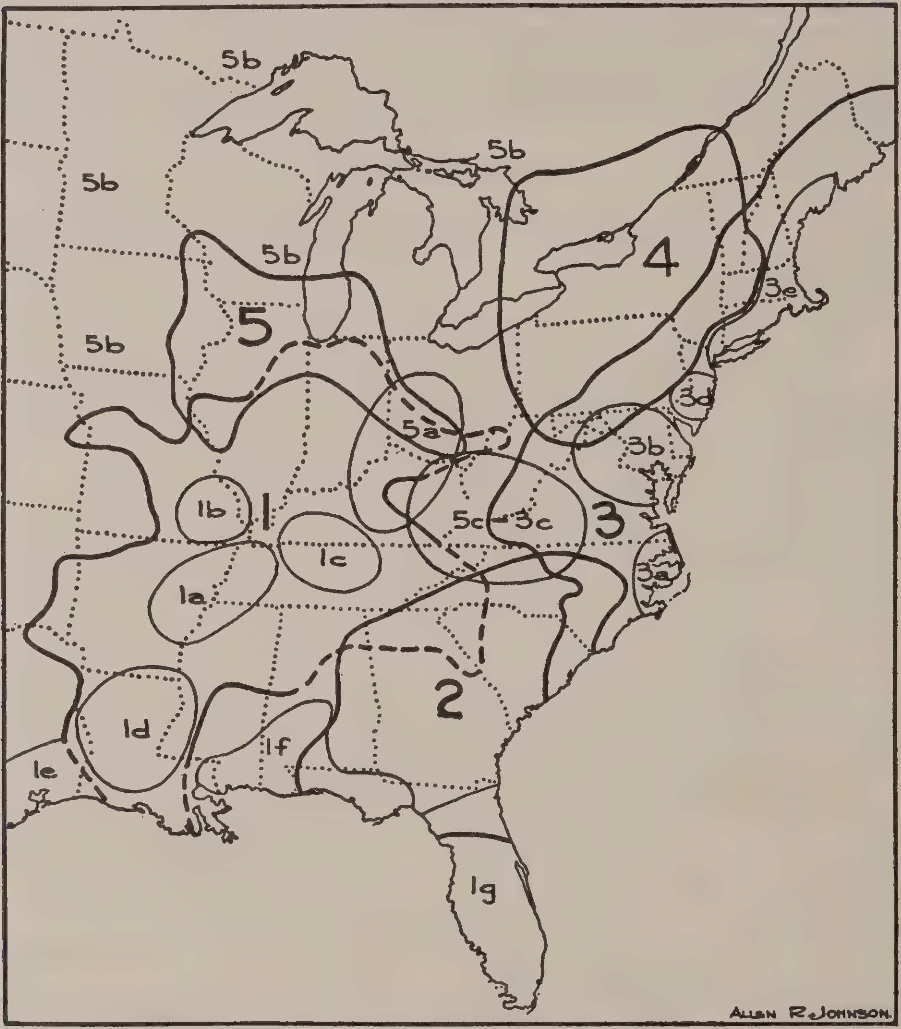
*Holmes on pottery.*—Holmes's study of eastern pottery[80] is also so comprehensive as to invite comparison. Again, I have taken his basic map, simplified it to dispense with the use of color, and added subareas from his text (map 16).

---

[79] As a result of recent exploration in Louisiana. In fact, Hopewell culture traits are now recognized in that state (F. M. Setzler, Jour. Wash. Acad. Sci., 23, no. 3, 1933, and USNM–R 82, 1933. See also J. A. Ford, Dep't of Conservation, Louisiana Geol. Survey, Anthr. Study no. 2, 1936, p. 219). Evidently, archaeological work on the lower Mississippi had not been prosecuted in Thomas' time.

[80] BAE–R 20, 1903.

Holmes's areas, or "groups" as he calls them, represent the distribution of pottery types, and therefore, as is expectable, sometimes overlap. The subareas are regions or centers of characterization of special types, and are not sharply localized by Holmes. The relation of some of them to the primary groups is left ambiguous. It is not clear, for instance, whether Lower Mississippi, Texas, Gulf Coast, Florida (1d, 1e, 1f, 1g, of map 16) are to be construed as somewhat divergent variants of the Middle Mississippi Valley group or as coördinate but lesser groups. Similarly with the Miami Valley type (5a), which is treated



Map 16. Pottery Types of the Eastern United States; after Holmes. Major groups (from Holmes's map): 1, Middle Mississippi Valley; 2, South Appalachian; 3, Middle and North Atlantic Slope; 4, Iroquoian; 5, Northwestern (or Upper Mississippi Valley). Subgroups (from Holmes's text): 1a, East Arkansas-West Tennessee; 1b, Southeast Missouri; 1c, Cumberland Valley; 1d, Lower Mississippi Valley; 1e, (Southeast) Texas; 1f, Gulf Coast; 1g, Florida (Peninsula). Relation of 1d, e, f to 1 not clearly defined. 3a, Pamlico-Albemarle; 3b, Potomac-Chesapeake; 3c–5c, Piedmont Virginia and Apalachee-Ohio; 3d, New Jersey; 3e, New England; 5a, Miami Valley; 5b (Peripheral) Northwest; 5c, see 3c.

as a subtype of Northwestern (5) but lies largely outside the assigned limits of this. Piedmont Virginia (3c) and Apalachee-Ohio (5c) seem to be substantially one.

The following findings result from a digest of Holmes's work:

1. The Lower and Middle Mississippi and nearly the whole of the Ohio Valley formed a larger unit, in which eastern pottery reached its climax. Local types of definite characterization clustered in the center of this area, about the confluence of the Ohio and Mississippi.
2. The Lower Mississippi showed some variation from the Middle, and the Gulf Coast and Florida still more, but traits like modeling and incising linked these subareas with the Middle Mississippi area.
3. The Northwestern area had its most definite characterization about the upper Mississippi and Lake Michigan—more or less in the region of Thomas' Illinois and Wisconsin districts—but extended also to the middle Missouri and northern upper Great Lakes.
4. The Iroquoian area of the lower Great Lakes, in spite of some overlap with the Atlantic Slope culture, was easily distinguishable from this in its types.
5. The (North and Middle) Atlantic Slope area was predominantly coastal. Its greatest extension inland was in the region of West Virginia, where the interior held no well-characterized pottery art. To the south, the Atlantic Slope area extended farther along the coast than in the piedmont.
6. The South Appalachian pottery type occurred mainly in the southernmost Atlantic slope. It centered in Georgia and reached well into the North Carolina piedmont. It faded out quickly in Alabama and did not reach far into the Florida peninsula. On the northwest its range was occupied also by the Middle Mississippi type, and on the southwest by the Gulf Coast type. South Appalachian ware was characterized by stamped decoration and simplicity of shapes.

This South Appalachian[81] or "South Atlantic" type is the only one of Holmes's "groups" or types to clash with the ethnological areas developed in the present work. It unites parts of my Southeastern and South Atlantic areas. It is easy to conceive of a special pottery style as spreading, or maintaining itself, irrespective of preponderant cultural affiliations; and this is probably what happened. If, on the other hand, this "South Appalachian" distinctness of pottery is symptomatic of a general cultural distinctness, the fact does not necessarily invalidate the views previously advanced in this paper, since the focal point of the Southeast has been seen as lying at its western margin, on the Mississippi, and Georgia would therefore be peripheral and more or less transitional. My northeastern boundary of the Southeast at the Savannah is avowedly tentative. Also, the historic prominence in the Southeast of the chief people of Georgia, the Creeks, has been indicated as not ancient but as enhanced by white contacts.

Whether the Lower-Middle Mississippi and Gulf Coast modeled and incised ware, or the Georgia type stamped ware, is on the whole the earlier, is not clear, but they certainly overlapped in time, both Holmes[82] and Moore[83] reporting them as associated in burials.

---

[81] Holmes's "South Appalachian" pottery area is not to be confounded with Thomas' "South Appalachian" mound area, which lay in Tennessee River and therefore Mississippi drainage. The historic tribes in the Holmes area were Muskogian, Yuchi, and Siouan; in the Thomas area, Cherokee.

[82] BAE–R 20:131, 1903.

[83] Jour. Acad. Nat. Sci. Phila., 11: pls. 9–15, 1897 (Georgia Coast); 11:453, 1901 (Northwest Florida Coast, I); 12:351, 1902 (Northwest Florida Coast, II); 12:474–491, 1903 (Apalachicola River).

There is indeed a suggestion, through the Georgia stamped ware, of a secondary subcenter within the Southeast near its eastern end, more or less in the region of the Lower Creeks. Nevertheless, it takes more than a pottery decoration technique to establish a type of culture. A ware might easily spread through only part of the culture in which it originated, yet penetrate into an adjoining culture. Until the occurrence of stamped ware is positively correlated with the occurrence of a sufficient number of other distinctive traits, nothing of a general cultural nature can be certainly inferred from this pottery.[84]

*Shetrone on Ohio.*—Shetrone's review of the archaeology of Ohio[85] is of special interest at two points. First, it suggests cultural connection between the Fort Ancient culture of Ohio and the Iroquoian of New York. This is in accord with the ethnological interpretation here followed.

Shetrone's second point, that to date the evidence on the two outstanding prehistoric culture types of Ohio, Fort Ancient and Hopewell, indicates them as contemporary, is puzzling. It is difficult to imagine them as retaining their individuality while geographically interdigitated in the Miami and Scioto valleys. That they overlapped in time is likely enough; but the whole situation would be much more comprehensible if their major durations and peaks differed by some centuries. Shetrone's conservatism is commendable, but fuller evidence may dispel its negativism.[86] After all, the data on Ohio archaeology, rich as they are, have generally not been accumulated with any preëminent sense of historical problem. If the two cultures prove to be at all distinct chronologically, it is likely that the Fort Ancient one will be construable as the later, in spite of its wider distribution. This is indicated by its relations with the historic Iroquoian culture; also by its association at Madisonville with European objects.[87] The more advanced Hopewell art seems farther from anything produced in the vicinity in Caucasian time, and on an aesthetic level with the pottery, shell, mica, and copper art of Arkansas, Tennessee, and northern Georgia, which was also presumably moribund or extinct at the opening of the historic period. According to the view here held, this older series of localized, intensive culture culminations, of an age perhaps not very remote but definitely pre-Caucasian, had partly disintegrated and shrunk areally, and remained best represented in historic time by the tribes of the Lower Mississippi climax, though with perhaps a special decay on the side of art.[88]

---

[84] Stirling has dealt with the stamped ware in an important paper read at the National Research Council Conference on Southern Prehistory at Birmingham, Alabama, in 1932, from which I do not cite for the same reason as already mentioned for Swanton's two papers there delivered. Stirling's accompanying map is valuable, and is novel in that it does not attempt to divide the whole eastern United States area between cultures exclusive of each other, but shows the extent of distinctive culture types or wares. In other words, he begins not with a given area to be accounted for, but rather with cultures about which something is known, without worrying about gaps. His method also results in overlaps of areas, but this is as it should be, since the prehistoric period was not static but undoubtedly contained geographical shifts and successions in time.

In Anthr. Essays, UC, 351–357, 1936, Stirling goes more fully into the archaeological culture types of Florida. Incidentally, he sees almost no Floridian-Antillean connections.

[85] AA 22:144–172, 1920.

[86] Shetrone's recent book, The Mound Builders, 1930, adds nothing positive on the problem.

[87] E. A. Hooton and C. C. Willoughby, PM–P 8:1–137, 1920.

*The Holmes and Wissler areal classifications.*—The two general archaeological classifications of Holmes[89] and Wissler[90] may also be compared. They differ little except in the east.

The two principal differences are that Wissler divides the Upper Mississippi and Lakes area (IV) of Holmes into two: an Iroquoian (3) and a Great Lakes (5) area; and that he places the boundary between his North and South Atlantic areas (1 and 2) at the Delaware instead of the Savannah. Holmes in fact recognizes only one area as outright on the Atlantic (I). His Georgia-Florida region (II) lies rather more in Gulf than in immediate Atlantic drainage,[91] and grades imperceptibly into the Mississippi Valley region (III), although set off "somewhat distinctly" from the Atlantic slope (I).[92] This tends to re-

TABLE 5

HOLMES AND WISSLER ARCHAEOLOGICAL AREAS

| Holmes | Wissler |
|---|---|
| I. North Atlantic | 1. North Atlantic. Center: New Jersey<br>a. New Jersey to New Hampshire<br>b. Maine to Newfoundland |
| II. Georgia-Florida | 2. South Atlantic. Center: Georgia<br>a. Georgia to Maryland<br>b. West Florida<br>c. Peninsular Florida |
| III. Middle and Lower Mississippi Valley | 4. Mississippi-Ohio. Center: Western Tennessee<br>x. Variant: Ohio<br>y. Variant transitional to 2: Gulf Coast |
| IV. Upper Mississippi and Lakes | 3. Iroquoian. Center: New York<br>5. Great Lakes. Center: Wisconsin<br>x. Variant: Missouri Valley |
| XI. Northern-Central (Labrador to Alaska) | 12. Canadian Interior (Labrador to Alaska) |

---

[88] Since 1932, Midwest archaeologists, coöperating under the leadership of W. C. McKern, have adopted a taxonomy by which they successively classify their cultural material into bases, patterns, phases, aspects, and foci. This approach should result in an objective and comparative organization of data, which in turn will almost inevitably eventuate in a reasonably dependable relative chronology—the beginnings of which, perhaps, are already emerging. Thus, Cole and Deuel, Rediscovering Illinois (Univ. Chicago, 1937), Appendix I, put Gartner, Baum, and Madisonville into the Fort Ancient aspect of the Upper phase of the Mississippi pattern; Etowah, Moundville, Aztalán into the Middle phase of Mississippi; and Hopewell 17 and Turner into a Woodland pattern. Other archaeologists tentatively keep Hopewell separate from both Mississippi and Woodland. "Upper" and "Middle" Mississippi do not refer to a time sequence, nor explicitly to an areal distribution, but to a nexus of traits; in other words, to an empirically determined culture growth or type, whose geography and chronology can then be investigated.

[89] Areas of American Culture Characterization, AA 16:413–446, 1914; map, pl. 32.

[90] The American Indian, ch. 15; map, p. 262 (1922 ed.).

[91] It differs, therefore, from the approximately corresponding "South Appalachian" area of his pottery classification, which lies more in Atlantic than in Gulf drainage.

[92] P. 421.

duce Georgia-Florida to a variant of Mississippi Valley; which accords with Holmes's bringing a salient of the Mississippi Valley area through northeastern Georgia to the sea, thus actually separating Georgia-Florida from (North) Atlantic.

Both authors agree in setting off the Atlantic slope from the rest of the East; in assigning the Upper Mississippi and Missouri with the Great Lakes; and in reckoning much of the Southeast with the Lower Mississippi and Ohio. This is in accord with the ethnological groupings of the present paper. Also, the point at which Holmes and Wissler differ most essentially, the attribution of Georgia, is one at which my classification is hesitant, namely, in regard to the geographical definition between the Southeast and South Atlantic areas.

## X. CULTURE AREAS: MEXICO AND CENTRAL AMERICA

THERE APPEARS TO BE no one living who really controls the existing knowledge on the native cultures of both Anglo-American and Latin-American North America. This section of the present work is therefore necessarily inadequate and preliminary. It is included because of the obvious dependence of the cultures north of the Rio Grande on those of Mexico-Guatemala in many respects. An analysis of the former without consideration of the latter would be like an anatomical description of a mammal confined to the parts below the neck on the ground that the head was difficult to deal with. In proportion as the judgments here rendered are unsatisfactory, they should stimulate sounder ones. In any event, the hesitancy of the map for Mexico should draw attention to a gaping chasm in ethnological knowledge and interest. The fact that Spanish-speaking Europeans colonized one part of the continent and English-speaking ones finally settled the rest is scarcely a reason why anthropological study of the two regions should continue indefinitely to be pursued on separate lines.

It is not only the barrier of modern speech difference that has brought about the aloofness. In the United States and Canada, knowledge has been acquired essentially through ethnological field studies in the past fifty years. In Mexico and Central America, the native cultures have in many parts been long since swept entirely away, and where they survive it is almost always spottily, in hybrid form. The great volume of sources is therefore either historical or achaeological; and the nature of the materials has tended to impose methods of handling them and, tacitly, of viewing them. Interest, being aroused in events, was diverted from culture. The archaeology of Mexico to date suffers not only from incompleteness of data, but also from the inclination to interpret before the available data are classified. The situation is the opposite of that in the United States, where habits of description and analysis have tended to choke even healthy attempts at historical interpretation.

### ISTHMUS

Panama and all Costa Rica except perhaps its extreme northwest seem to form a larger cultural unit belonging with South America. Brinton long ago recognized the southern boundary of Nicaragua as the ethnographic frontier of North against South America.[1] Conifers find their virtual southern limit at the same line.[2] Speech everywhere in the Isthmian area is undoubtedly Chibchan, or is put in a Cuna group considered probably Chibchan. Ancient gold work is of Colombian type. Architecture and sculpture remained undeveloped. Maya influences in pottery styles are absent or indirect and weak.

If any notable subdivision of the culture existed, it is likely to have been on the basis of a relatively arid Pacific and a wet Atlantic slope. Lothrop recognizes an archaeologically separate "Highland area" in north-central Costa

---

[1] The American Race, 164, 1901: ". . . the mountain chain [*sic*] which separates Nicaragua from Costa Rica, and the headwaters of the Rio Frio from those of the more southern and eastern streams, is the ethnographic boundary of North America."

[2] Sapper, Mittelamerikanische Reisen und Studien, 1902, puts the limit within Nicaragua, nearly along latitude 13°, north of Lake Nicaragua (pl. 2).

Rica, and the shores of the Gulf of Nicoya he includes with western Nicaragua in a "Pacific area." The former extends "southward, with local modifications, into Colombia and Ecuador."[3]

### 1. ATLANTIC NICARAGUA-HONDURAS

This is an area of tropical rain forest, with some coniferous stands at higher altitudes. The historic tribes—Mosquito, Ulua, Sumo, Paya, Xicaque, Lenca—can be reckoned as "uncivilized." They had no large towns, left no notable monuments, and their archaeological remains are so poor and infrequent as to have attracted little exploration. In relation to North America, this triangular area formed a side pocket: Mexican-Guatemalan influences ran down the Pacific face of Honduras and Nicaragua. It is rather remarkable how little imprint Maya civilization left on this immediately adjacent low culture, especially as both were situated in tropically forested lowlands. On the other hand, the door was open into Atlantic Nicaragua-Honduras from the adjoining tropical Isthmian area, through which South American influences appear to have penetrated. Some of the languages, such as Ulua-Sumo, are probably of Chibchan affinity.

The position of the Rama and Matagalpa is not quite clear. They may belong with the last preceding cultures and the next to be discussed, respectively.

### 2. PACIFIC NICARAGUA

This area comprises the Pacific frontage from the Gulf of Nicoya to that of Fonseca, that is, parts of Costa Rica and Honduras as well as Nicaragua; it may take in Salvador. It is a well-marked tract of arid deciduous forest. Culturally it is the Chorotegan area. The groups involved are, from southeast to northwest, the Orotina, Nahuan Nicarao, Diri, Subtiaba, Chorotega; the inland Matagalpa may possibly have to be included. Lothrop, dealing with archaeology, calls this the "Pacific area" of Nicaragua-Costa Rica and extends it somewhat farther inland than is shown on map 6. Both Maya and presumable Toltec and Nahuan influences are discernible in pottery and sculpture. South American relations are less evident.

### 3. SALVADOR

Salvador is only tentatively suggested as a separate area. It may prove to be no more than a subarea of Pacific Nicaragua or Upland Guatemala. The peoples under consideration are the Nahuan Pipiles and branches of the Lenca.[4]

### 4. UPLAND GUATEMALA

This is the area of the upland nations of Maya family, the Pokomam, Cakchiquel, Qu'iché, Mame, Tzental, Tzotzil, and others, plus a few alien intrusions or remnants, especially of Nahuan Pipiles. The area covers highland Guatemala and parts of Chiapas north and west down to about the 600-meter contour; also the steep Pacific slope. Most of it is tierra templada or fria; the vegetation varies between shrub steppe, moist savanna, moist coniferous, oak-pine, and arid forest, with an edge of tropical rain forest on the northeast. The culture is generic but not specific Maya, less developed in architecture, sculpture, and calendar than that of the Maya proper. There are more evidences than among the Maya proper of Mexican influences, such as ball courts, and more relations to Salvador and Pacific Nicaragua.[5]

---

[3] Pottery of Costa Rica and Nicaragua, MAIHF–C 8, 1:89, fig. 1 (p. xxv), 1926.

[4] See W. Lehmann, Ergebnisse einer Forschungsreise, ZE, 1910, 687–749; H. J. Spinden, Notes on the Archaeology of Salvador, AA 17:446–487, 1915; F. Weber, Zur Archaeologie Salvadors, Seler Festschrift, 619–644.

### 5. YUCATAN PENINSULA

This culture area covers the entire peninsula of Yucatán; that is, much more than the modern state of Yucatán. It includes, on the one hand, a strip of northwestern Honduras, on the other, most of Tabasco; and extends into Guatemala and Chiapas about as far as the tierra caliente, which according to Sapper generally lies below the 600-meter level. It comprises all of the tierra caliente in the region except probably a strip north and east of Coban in Guatemala, largely corresponding to the modern territory of the Kekchi. The whole area is tropical rain forest, except for the northern end of the peninsula, which is variously described as jungle, scrub, and arid forest. Sanders calls it jungle; Sapper, savanna alternating with tropical forest. The culture of the Yucatán Peninsula was the classic Maya one, old and new period. The peoples today in the area of Maya ruins are, besides the Maya and Lacandón, the Chontal, Chol, and perhaps Chortí—the decisively lowland members of the family. Whether Comalcalco, Palenque, and Copan were built by the ancestors of these three nationalities or by the ancestors of the modern Maya proper, there seems no sure way of deciding at present.

### RELATIONS OF MAYA UPLAND AND LOWLAND

Spinden makes a generalized, archaic form of Maya civilization originate in the Mexican-Guatemalan uplands, where maize culture became established, which was then transported north into the lowlands by the carriers of the old and new Maya cultures.[6] The habitus of maize is construed as indicating that its first domestication took place in a tropical highland and not in the rain-forested peninsula of Yucatán. This may be true, though it has been questioned.[7] But the rest of Spinden's interpretation is wholly hypothetical. So far as we know now, the specific Maya civilization, which can be traced back about 2000 years, existed chiefly or wholly in the lowlands. Whether it first developed this specific form there or in the uplands, and whether it was transplanted at all, are points on which there seems to be no clear evidence. The domestication of maize may have taken place several thousand years before

---

[5] Cf. A. M. Tozzer, Time and American Archaeology, Natural History, 27:210–221, 1927; esp. map, fig. 4.

[6] ICA 19 (1915, Washington):269–276, 1917; Ancient Civilizations of Mexico and Central America, AMNH–H 3:48, 1922; Geogr. Rev., 18:650, 1928.

[7] By Sauer and Brand, in Aztatlán, UC–IA no. 1:59, 1932. Their point seems valid, that the inherent requirements of the maize plant are completely met by a frostless summer-rain climate, and that irrigation is therefore an unnecessary factor to assume for the circumstances of domestication. A much larger area than the Mexican Mesa Central or Guatemala Uplands is accordingly open to the possibility of being the original home of maize.

Maya civilization as such began. The two events may have been in the same book but in totally different chapters. It is quite conceivable that the generic foundation of Maya culture was laid in the highlands, and that the very transplantation into the lowlands was a stimulus which helped to develop the highly specialized Maya sculpture, time system, and other features. But, until archaeology delivers some unambiguous evidence, such a view is theory. The outstanding fact to date is that all specific expressions of Maya as distinct from Mayoid civilization have been found in the relatively low tierra caliente.

Sapper devotes a chapter[8] to the problem of the original home of the Maya, and while he leans to the Chiapas-Guatemala highland as the most probable source, he leaves the question open, and emphasizes that Mayan peoples must have been settled in tropical rain forest at a very early time. This still seems a fair statement, in spite of the progress of Maya archaeology during the past generation.

Sapper[9] gives a table of altitude distribution of cultivated plants in Guatemala-Chiapas which has a bearing on the relation of lowland and upland in the past. This table summarizes approximately thus:

*Native Plants*

Restricted to Tierra Caliente (below 600 m.): cotton, cacao, henequen
In Tierra Caliente and Templada (to 1800 m.): tobacco, chile, yucca
In Tierra Caliente, Templada, and Fria: maize, beans, agave

*Introduced Plants*

Restricted to Tierra Caliente: rice, coffee
In Tierra Caliente and Templada: sugar cane, banana, orange
Restricted to Tierra Fria (above 1800): wheat, barley, peach, potato

It follows that in native times all highland plants could be and presumably were grown in the lowland, but that the reverse was not true: some lowland products were restricted to the lowland and others extended up only into the 2000–6000-foot zone. The plants confined to the uplands are all introduced by the Spaniards. There certainly is no warrant in these facts for regarding lowland Maya agriculture as an appendix or outgrowth of upland. It shared in all that the upland possessed; it may or may not have been basic to it.

A classification of the Mayan languages as a group is interesting for its bearing on the problems under discussion. Stoll's attempt in this direction is not wholly satisfactory.[10] However, his and Berendt's vocabularies, supple-

---

[8] Die Heimath der Mayavölker, 390–400, in Das nördliche Mittel-Amerika, 1897.

On p. 394 he estimates the modern population of the lowland Maya tribes (Maya, Lacandon, Chontal, Chol, Chortí) at somewhat less than 400,000; of the highland tribes (all others), at 850,000–900,000.

[9] Das nördliche Mittel-Amerika, 402. See also Die feldbauliche Aupassung der Indianer Guatemalas, ICA 25 (1932, La Plata), 1:309–321, 1934.

[10] Zur Ethnographie der Republik Guatemala, 1884. His classification is: A, Huastec; B, subdividing into Ia, b, IIa, b, c, as follows: Ia, Maya, Mopan; Ib, Chontal, Tzental, Tzotzil, Chanabal, Chol; IIa, Quekchi, Pokonchi, Pokomam, Chorti; IIb, Cakchiquel, Tz'utujil, Qu'iche, Uspantec; IIc, Ixil, Mame, Aguacatec.

Wm. Gates also has a classification of the "Mayance" languages in Appendix XII of Mormented by Sapper's, allow a tentative arraying of the dialects in groups. I have tried to express the internal classification of the linguistic family diagrammatically in table 6. Single languages, or groups of closely related dialects, are enclosed in boxes of light lines. Boxes of heavier lines combine the more nearly related of these, in some instances with overlapping. The degree of differentiation between both smaller and larger groups is suggested by the distances between light and heavy boxes. A few supplementary or special relations are shown by broken arrows. The main division, so far as linguistics is concerned, is into two groups: Lowland Maya and Highland Maya. In the main, the territories covered are also lowland and highland. But on the one hand Tzental-Tzotzil-Chañabal, Motozintlec, Jacaltec, and Chuj of the Lowland division are actually spoken in the western highland, above 2000 feet; and on the other hand Kekchi is a Highland tongue although now spoken mostly in the tierra caliente.[11] These instances of nonconformity of speech affiliation and altitude habitat are marked in the diagram by an asterisk.

Very remarkable, in view of the geographic separation, is the similarity of Chicomuceltec and Huastec.[12] That Chicomuceltec shows certain additional re-

---

ley's Inscriptions at Copan, Carnegie Inst. Publ. no. 219, 1920. He recognizes seven main branches, which, with their dialects, are:

1. Maya (Maya, Itzá, Lacandón)
2. Tzental (Tzental, Tzotzil, Chontal, Chañabal)
3. Cholti (Choltí, Chortí)
4. Mame (Mame, Ixil, Aguacateca, Solomeca, Jacalteca, Chuje, Chicomucelteca, Motozintleca)
5. Quiché (Quiché, Cakchiquel, Tzutuhil, Uspanteca)
6. Pokom (Pokomán, Pokonchí, Kekchí)
7. Huasteca

Gates's discussion of the interrelationships of the first six main branches is interwoven with nonlinguistic considerations, but as nearly as I can make out comes to this: Chol(tí) is nearest to Tzental, probably next closest to Mame (*sic*!), then to Maya, most different from Quiché-Pokom. This seems equivalent to a main division into Quiché-Pokom, corresponding to my Highland and Stoll's II but without Mame; and into Tzental-Choltí-Mame-Maya, corresponding to my Lowland and Stoll's I but with Mame added. (With regard to the construal of the Mame group as of Lowland type, I must side definitely with Stoll against it; although Mame is somewhat the closest of the Highland languages to the Lowland, as might be expected from geography, Quiché-Pokom being on the whole the most remote, and marginal to the Nahuan Pipil). Gates's valid point seems to be that Chortí goes with Chol(tí), its classification with Pokom resting upon the erroneous tribal identification of an informant by Stephens. By this correction the territory of the ancient city of Copan is restored to Lowland speech.

Beyond these points, Gates is not altogether clear: as when (p. 611) he has Tzental-Chol agreeing more often with Maya than with Quiché-Pokom, but on the other hand Maya "frequently in accord" with Quiché-Pokom and "rarely" with intervening Tzental-Chol. In short, X—Y<X—Z, but Y—Z<Y—X. This can only mean that Y (Maya) is linguistically intermediate between X (Tzental-Chol) and Z (Quiché-Pokom); which is unlikely in view of the fact that X (Tzental-Chol) is geographically intermediate. Gates's explanation seems to be (pp. 611, 615) that Tzental-Chol (with Mame) represents an archaic, little-changed form of Mayan, whereas Maya and Quiché-Pokom represent later stages of Mayan speech, associated with two new kingdoms. To this view there are two objections: first, that degree of linguistic similarity must be determined purely from linguistic evidence, not from historic or cultural data; and second, that comparative Mayan philology must be advanced much farther before we shall be in a position to judge which languages are most archaic, that is, closest to reconstructed primitive Mayan. This primitive Mayan has not yet begun to be defined.

[11] Sapper, Das nördliche Mittel-Amerika, 397, has shown that the Kekchi advanced northward into the lowland.

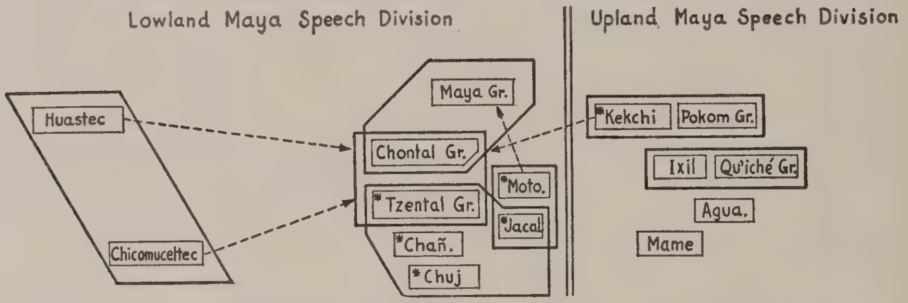
[12] Sapper, 244.

semblances to Tzental, Chañabal, Chuj, and Jacaltec, which border upon it on the north and east, is not surprising; no more than the fact that the nearest relative of Huastec, other than Chicomuceltec, is Chontal, which lies nearest to it of all other Mayan languages, on their northwest frontier. What is of significance, surely, is that the little Chicomuceltec territory lies at least partly below the 600-meter contour; and that the language is very different from Mame, of the Highland speech division, which adjoins it on the south. In the same way Chortí, although far separated geographically from Chol and Chontal, is very close to them as a dialect. It occupies the same position, relatively to Maya proper, on the southeast as Chol and Chontal do on the southwest. These three languages seem to have been originally distributed in a zone separating the Maya proper from the Mayan Lowland-type languages spoken in the northwestern uplands and from the Highland-type languages of the remaining uplands.

TABLE 6

CLASSIFICATION OF THE MAYAN LANGUAGES

Degree of interrelationship shown by distance and inclusion in heavy lines.



* Tribes actually living in habitat of other division.

Maya group includes Mopan and Lacandón; Chontal group includes Chol and Chortí; Tzental group includes Tzotzil; Qu'iché group includes Cakchiquel, Tzutuhil, Uspantec; Pokom group consists of Pokomam and Pokonchí.

Abbreviations: Moto., Motozintlec; Chañ., Chañabal; Jacal., Jacaltec; Agua., Aguacatec.

These relations between degree of speech affinity and territorial distribution of dialects all indicate that a distinction between lowland and highland has been of profound importance in Mayan history for a very long time past.

That some of the more important Highland dialects, like Mame, Qu'iché, Cakchiquel, formerly seem to have extended down to the Pacific Ocean is no doubt due to the narrowness of this southern coast and its probable failure to develop life habits, culture, and speech groups of its own.

A quality of narrowness of range applies to Mayan culture as a whole, Upland and Lowland conjoined, almost as much as to either of these divisions alone. This culture never penetrated to any serious extent beyond the territory held by the historic Mayan tribes. There seems to be no true Maya stratum or archaeological horizon in Oaxaca and Vera Cruz, nor eastward beyond Salvador. Mayan relations or influences may be discernible as far as the Totonac and Chorotega. But influences are another thing from presence of the culture; and at that, the distances in each direction are not great—less than from the mouth of the Mississippi to that of the Ohio. The generic Mayan as well as the specific Maya culture were nonexpansive, nonpropagandizing, self-sufficient, conservative; they both remained sharply localized, like the early cultures of Peru—Chimu, Chavín, Nazca. Sapper's maps of the limits of surviving Mayan place names show very nearly the same territory as that occupied by historic Mayan tribes or that containing ruins or sculptures of Mayan type.[13]

Incidentally, if the specific Maya civilization were due to an Asiatic people familiar with elephants, these immigrants would have had to establish themselves on Pacific frontage, push across the Guatemalan uplands, and, after redescending into the peninsular lowlands, revive the flowering of their art. If the much-disputed carvings really represent elephants, it seems at least as likely that they represent acquaintance with a proboscid species which survived locally into the last pre-Christian millennium.

The late Maya cities in the northern part of the peninsula lie in relatively arid jungle or scrub forest, the older ones apparently all in true rain-forest country.

### 6. OAXACA-TEHUANTEPEC

From here on, the areas become especially tentative. The language distribution is irregular, and archaeology has been prosecuted at special points of interest rather than systematically.

The Zapotec are quite generally accorded a culture type of their own, but no one seems to have been interested in its limits. The Mixe-Zoque region between them and the Mayan uplanders is little reported. I incline to include this tract with the Zapotec on account of the association of Oaxaca and Tehuantepec in Aztec eyes. Since what is called Zapotec pottery is modeled, and that known as Mixtec painted, I put the western boundary of the area between these two peoples.

There remains much diversity within this area. The coast is hot, Oaxaca Valley temperate, the adjacent mountains (above 8000 feet) cool, the Isthmus low and warm. The Zapotec were a relatively cultured people, the Mixe and Zoque passed as barbarous. The Mixe and Zoque generally lived at lower levels than the Zapotec of Oaxaca, Etla, Tlacolula, Ejutla; that is, presumably in denser vegetation. This may be the reason for their backwardness. Within the Zapotec territory an older culture of Monte Albán and a later one of Mitla are distinguished.[14] The former has more Mayan, the latter more Toltec-Aztec affinities; but both show considerable individuality. In speech it is customary to connect Zapotec with Mixtec and other languages on its west. But the relations of these tongues are far from clear. They differ pretty heavily in vocabulary, and their similarity of plan may prove to be a secondary converging development of habitus in such matters as tonality and phonetic condensation. On the whole, it seems expectable that they will prove related; but we are only at the threshold of knowledge. Some would go so far as to connect Zapotec-Mixtec with the Otomí group; which, however, seems a step farther into speculation, which only the future can prove or disprove.

---

[13] Das nördliche Mittel-Amerika, maps 3, 5, 7, 8. See also S. K. Lothrop, The Southeastern Frontier of the Maya, AA 41:42–54, 1939.

[14] The recent excavations carried on by the Mexican government at Monte Albán under A. Caso are revealing a succession of cultural stages.

The heart of the Zapotec culture lies in upland. The hot coast is little known, and may belong culturally with adjacent coastal stretches, though Zapotec speech extended down to the ocean.

### 7. GUERRERO

Guerrero is one of the least known regions of the continent, ethnologically and archaeologically. Its prehistoric remains seem to show some particularity. Tentatively I include in the area adjacent parts of Oaxaca and Michoacán. The region is hot and subarid, the vegetation mostly jungle, scrub, or savanna.

### 8. VERA CRUZ

The state of Vera Cruz seems to coincide approximately with a fairly definite ethnic and cultural region. This consists of the stretch of tierra caliente, and lower tierra templada, which follows the Gulf coast between the Mayan peoples and the barbarous tribes beyond the Pánuco. The inhabitants were Nahuan nationalities such as those of Coatzacoalco and Cuetlaxtlán; the Totanac; and the Mayan Huastec. The last named may constitute a separate subarea. The climate of the Vera Cruz area is much wetter than that on the Pacific side of Mexico, and allows of stretches of tropical rain forest, behind which rises deciduous forest. At the Pánuco, or rather a little beyond it, climate and vegetation seem to change rather abruptly, as do culture and speech affiliation.

Nearly at Punta Bernal the Vera Cruz shore alters. To the north, dune formations predominate; to the south, coral reefs and mangroves. The true lowland is generally wider in the south than in the north, except for an area immediately on the Pánuco. The northern coast was held by Huastec and Totonac; the southern, mostly by Nahua-speaking peoples. The Cerro Montoso type of archaeological remains is characteristic of the (southern end of the) northern coastal stretch; the Ranchito de las Ánimas type, of the southern district.[15] It would therefore appear that two cultural subareas can be distinguished within the Vera Cruz area, the line of demarcation being approximately the latitude of the Cofre de Perote.

### 9. SOUTHEASTERN CENTRAL MESA

This is the heart of the Nahua area, including Tula, Teotihuacán, Tezcoco, Mexico, Tlaxcala, Cholula, Tehuacán, and Teotitlán—the center of Toltec and Aztec development. It is mainly tierra fria, constituting the high southeastern apex not only of the "Mesa Central" (maps 22, 23, pp. 198, 199 below), but of the whole of "Interior Mexico." The area is easier to recognize as a historic entity than to delimit. I have tentatively omitted most of Hidalgo as belonging rather with the Vera Cruz and Otomí-Guanajuato-Querétaro areas. Some of the nearer Mixtec should perhaps be counted in: the affiliations of this people seem doubtful as between the three areas which they adjoin.

---

[15] W. Krickeberg, Die Totonaken, Baessler-Archiv, 7:3, 55, 1918.

This is an area apparently difficult to classify in terms of phytogeographic concepts evolved mainly north of the Rio Grande. Its high borders are pine forest; the basins are variously labeled scrub, desert, savanna. The determining factors of the vegetation seem to be the combination of tropical summer rains and winter drought with moderate temperature due to unbroken elevation. Morelos is lower and warmer, growing cotton, sugar, and rice, and should therefore perhaps have been counted rather with Guerrero. Its culture at the discovery seems to have been of Aztec type; but Xochicalco is evidence of an earlier culture which was not specifically Toltec.

The Southeastern Central Mesa is, with the Guatemala Highlands, one of the areas in which the first domestication of maize is usually assumed by archaeologists to have taken place. While it would be idle to contest this unproved assumption, it is well to remember that there may have been a great gap in time between the first maize farming and the archaeological period which it has become customary to call Archaic; and as for the antiquity of the Archaic, the vicinity of Mexico City has been so much more intensively explored than all other parts of the republic that the prehistoric record is much fuller and therefore seems longer. In other words, lack of serious search elsewhere is not proof of the priority of culture in the Basin of Mexico.[16] Still, there is no doubt that this region is one in which relatively high cultures flourished for a long time, and with essential continuity.

### 10. MICHOACAN

Michoacán, the country of the Tarasco, who are fairly well known through the compilations and interpretations of León and Seler,[17] is the south-central part of the Mesa Central. Geologically, climatically, and vegetationally it is allied to the area last named above. Ethnically it was a unit, and culturally evinced about the expectable degree of similarity to the Toltec-Aztec center; though with definite provincial integrity, as is well revealed by Seler's admirable analysis.[18]

### 11, 12. JALISCO HIGHLAND AND JALISCO COAST

West and northwest of the Tarasco of Michoacán lived groups generally credited with speaking a dialect of Nahua or Mexicano. This may be correct, but it does not follow that Nahua was the sole speech of the area, since the Spaniards troubled themselves little about distinct local languages if there were Nahua-speaking elements in the population to interpret for them. The culture seems still to have been of Mexican type: pyramid mounds occurred. Sculpture was poor or lacking; there appears to be no mention of calendar system. It may be assumed that in content and level this culture was similar to that of Michoacán, though presumably one step farther removed in quality as well as distance from that of the Toltec-Aztec center. The pottery remains on the whole confirm this judgment, though they must as yet be used with caution: first, because of a simplifying inclination in some quarters to merge everything west of Toluca into a single "tipo Tarasco"; and secondly, because the relative age of the various types is wholly unknown.

---

[16] Vaillant's continued excavations and analysis of the succession of cultures in and around the Valley of Mexico, published cumulatively in AMNH–AP, give an apparently continuous record from the historic Aztec back to the earliest known "Archaic" phase. They show conclusively that this phase is far from being really archaic or incipient; and in Vaillant's opinion the whole sequence was unrolled in a millennium and a half. According to botanists, a considerably longer period must probably be allowed since the domestication of maize.

[17] N. León, Los Tarascos (Mexico, Museo Nacional, 1904); E. Seler, Die alten Bewohner der Landschaft Michuacan (Gesamm. Abhandlungen, 3:33–156, 1908).

[18] Thus the calendar seems to have been essentially the Aztec one: Seler, 156.

I assume that upland and lowland culture in this region will prove to be somewhat different, and therefore tentatively distinguish:

11. Jalisco Highland.
12. Jalisco Coast, west of the Cordillera, and including Colima and the southern end of the low-lying portion of Nayarit (Tepic).

These two cultural areas divide much along the line which separates two physiographic or "natural" regions of Mexico: the Volcanic Area from the Sierra del Sur of Thayer, and the Mesa Central from the Southern Escarpment of McBride.[19] (Maps 7, 22.)

The Rio Grande or Santiago debouches about through the center of Nayarit. About its mouth, and north, lay the district of Centispac. Next, on the Acaponeta, Sauer and Brand[20] reckon the province of Aztatlán, and this in turn was succeeded by Chametla, and then Culiacán in Sinaloa. Acaponeta still has pyramids, or at least mounds, and may therefore belong rather with the Jalisco than with the Sinaloa area. Until the Jalisco area is explored from the same point of view and observational technique, this point must be left open.

Mendizábal, whose work, simplified in map 17, is discussed and cited below, recognizes a "reino de Colima,"[21] larger than Tarascan Michoacán and adjacent to it on the west, as distinct from the "pequeños estados" like Xalisco to its north. He also represents as nonagricultural the populations in the northeastern part of my Jalisco Highland area.

The modern population of the Jalisco Highland area is fairly dense (map 20). This may be the result of a particularly successful adaptation of Spanish colonial culture to the environment of the western Mesa Central. For instance, Jalisco produces 42 per cent of all the maize grown in Mexico,[22] and in part is good wheat-growing country. If aboriginal, the population density of the Jalisco Highland would suggest a higher cultural level than the area is generally assumed to have possessed.

---

[19] W. N. Thayer, The Physiography of Mexico, 24:61–94, 1916; G. M. McBride, The Land Systems of Mexico, Am. Geogr. Soc., Research Ser., no. 12, 1923. Both are discussed below, in the section on Physiographic Areas.

[20] Aztatlán, UC–IA no. 1, 1932.

[21] The limits of this "kingdom" of Colima, roughly defined by Colima, Lake Chapala, Cape Corrientes (see also Orozco y Berra, 274), cut across the boundary which separates my Jalisco Highland and Jalisco Coast. If cultural unity can be attributed to this "kingdom," my two areas would probably be replaceable by a northern and a southern one: say Lower Santiago or Jalisco, and Colima.

[22] C. C. Colby, Source Book for the Economic Geogr of North America, 1921, p. 383, quoting Finch and Baker, Geogr. of World's Agric., U. S. Dept. Agr., Off. Farm Management, 1917.

### 13. NORTHEASTERN CENTRAL MESA: GUANAJUATO-QUERÉTARO

These two states of the northeastern Mesa Central were the home of the Otomí, who held also much of Hidalgo. Some of the Otomí, with their linguistic relatives the Mazahua, were in the western part of the state of Mexico, between the Nahua of the Valley of Mexico and the Tarasco of Michoacán. The Otomí were looked upon as provincial boors by the Aztecs, and were evidently in some measure dependent on the Southeast Mesa Central and Vera Cruz Coast;[23] but their culture is too little known for its place to be made certain.[24] The region is subarid, mainly classifiable as grass or scrub, but not desert.

This is the fourth area recognized as on the Mesa Central:

| *Position in Mesa Central* | *Area* | *Ethnic groups* |
|---|---|---|
| Southeastern | Southeastern Central Mesa | Toltec-Aztec Nahuan |
| Middle Southern | Michoacán | Tarasco |
| Western | Jalisco Highland | Nahuan (?) |
| Northeastern | Guanajuato-Querétaro | Otomí |

The northern part of the Mesa Central seems to have been nonagricultural, and is here reckoned in the North Mexican Interior Plateau area of culture.[25]

## NORTH MEXICAN AREAS

The half or more of Mexico which lies north of the Pánuco and Santiago rivers is probably the least known part of native North America, archaeologically, ethnologically, and linguistically. The old culture is long since gone, many of the languages are wholly extinct, the majority of ethnic groups are absorbed or practically dissolved, and archaeological exploration remains minimal.

### *Documentary Sources*

I base my classification largely on a comparative ethnological study of northern Mexico by Ralph Beals.[26] It is a topical and areal compilation of the principal published documentary historical sources. The Beals study is supplemented by a recent map by Mendizábal,[27] (simplified in map 17), and by several archaeological and linguistic considerations.

The outstanding finding of the Beals survey is that at the time of Spanish exploration and settlement a large part of northern Mexico was nonagricultural—a much larger part than has been assumed, as for instance by Spinden and Wissler and those who have followed them. Beals classes the following groups as not farming: the Mexican Apache, Lipan (Toboso), Coahuiltec, northwestern Tamaulipec, Janambre, southern Concho, part of the Lagunero

---

[23] Thus A. Caso, in ICA 23 (1928, New York): 130–135, 1930, describes an Otomí day-sign calendar codex from Huichapán in Hidalgo.

[24] J. Soustelle, in La Famille Otomi-Pame, Trav. et Mém. de l'Instit. d'Ethnol., 26, 1937, has given an extremely valuable account, with many new data, of the languages, modern material culture, and historic relations of the Otomian family.

[25] Delimitations of the Mesa Central are given in maps 22, 23.

[26] The Comparative Ethnology of Northern Mexico before 1750, UC–IA no. 2, 1932.

[27] M. O. de Mendizábal, Influencia de la Sal en la Distribución Geográfica de los Grupos Indígenas de México, ICA 23 (1928, New York):93–100, 1930.

(Irritila), Guachichil, Zacatec, eastern Tarahumar, probably the Pame, perhaps part of the Tepehuán, and apparently local fractions of other groups such as the Pima and Otomí. In more summary terms, an immense area in Mexico comprising nearly all of the interior drainage basins of the northern plateau and much surrounding territory—roughly the whole area between the Sierra Madre Occidental and Sierra Madre Oriental—agreed with the United States plains and western and southern Texas in being nonagricultural in native times.

The areal classification of Beals is as follows:

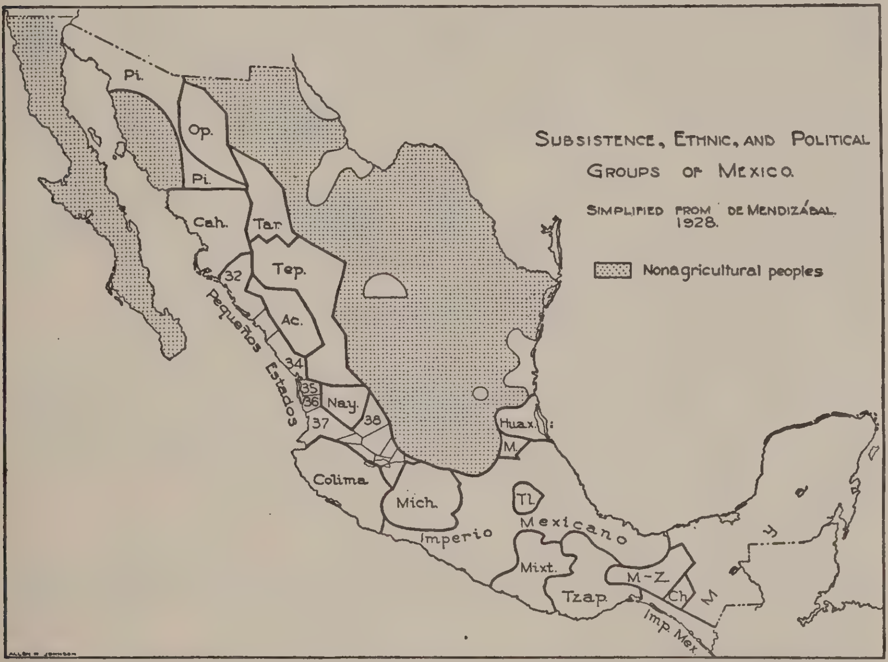
Jalisco-Tepic
Culiacán-Tepic, from the Mocorito south
Old Sinaloa, the Cáhita area, from the lower Sinaloa to the lower Yaqui
Old Sonora, from the Yaqui north, Pima and Opata
Southern Sierra, probably subdivisible into: a, Huichol, Cora, Tepecano, Zacatec; b, Acaxee, Tepehuán
Northern Sierra, Tarahumar
Central Agriculturists, Concho of Conchos River and Lagunero of Nazas River and Parras Lake—two separate tracts
Tamaulipas, the southeastern Tamaulipec
Nomads, the nonfarming tribes as just listed

He gauges the relations of these groups by the degree to which they partake of "South Mexican," that is, Aztec, culture. Of 78 South Mexican traits selected because they occur also among at least two North Mexican groups, Jalisco-Tepic has or probably had 56; Culiacán-Tepic, 43; Old Sinaloa, 38; Old Sonora, 40; the Southern Sierra, 55; the Northern Sierra, 25; the Nomads, 17; the Central Agriculturists (mainly in the northern part of the Nomad area), 17; Tamaulipas, 22; the Southwestern United States, 42; the Southeastern United States, 33.

Several considerations must be borne in mind in regard to this computation. First, the data are unequal in fullness. That the American Southwest shows more than twice as many South Mexican traits as the Central Agriculturists, in spite of greater distance, is surely due partly to more complete information; though it is also probable that the richer culture of the Southwest received and retained more elements of southern origin than did the meager culture of the Concho and Lagunero. Second, in the frequent scantiness of data, traits occurring among one population of an area have apparently had to be counted for the area as a whole. This gives the figures less accuracy than if the computation could have been made on a tribal basis. Third, and allied to the last, is the fact that the areas to which the statistics apply represent subjective groupings. This is no different, except in degree, from the culture areas of other authors in other regions, but must be taken into account. Lastly, the figures indicate only the relative, not the absolute, degree of similarity to Aztec culture, elements of the latter which have not been reported in the north, like the calendar system for instance, not being included. Thus the figures, Southern Mexico 78, Jalisco-Tepic 56, Old Sinaloa 38, do not mean that Jaliscan culture contained seven-tenths of Aztec culture; but they do suggest that nearly twice as many traits of the high southern culture extended into Jalisco as to the Cáhita.

After all needful reservations, however, the data collected and computed by Beals allow of considerable insight into cultural conditions in this obscure region.

The study by Mendizábal is a more special one, devoted to the importance of salt in native Mexico. But he uses as his basis a map showing the indigenous modes of life and subsistence régimes. Although schematic in some of its lines, this map is valuable in several respects, and I have therefore appended a somewhat simplified reproduction of it (map 17). In this I have shaded the area given by Mendizábal as nonagricultural. It will be seen that the nonfarming area coincides quite closely with that of Beals—in fact, extends a little farther south onto the Mesa Central among the Otomí. As these two students worked quite independently, their corroborative findings can be accepted as


Subsistence, Ethnic, and Political Groups of Mexico.
Simplified from de Mendizábal. 1928.
▨ Nonagricultural peoples
Pi.
Op.
Pi.
Cah.
Tar.
Tep.
32
Ac.
Pequeños Estados
34
35
36
Nay.
37
38
Huax.
M.
Colima
Mich.
Tl.
Mexicano
Imperio
Mixt.
M-Z.
Tzap.
Ch.
Imp. Mex.

Map 17. Subsistence, Ethnic, and Political Groups of Native Mexico; simplified from Mendizábal. Of particular interest is the large nonagricultural area in the northeast, contrasted with the continuous "corridor" of farming peoples on the Pacific coast and in the Sierra Madre leading to the agricultural area of the American Southwest. Note also the political or near-political organization of society up the Pacific coast as far as northern Sinaloa.

ABBREVIATIONS

| | | | | | |
|---|---|---|---|---|---|
| Pi. | Pima | 32 | Culiacán | Huax. | Huaxtecapán |
| Op. | Opata | 34 | Chiametla | M. | Meztitlán |
| Cah. | Cáhita | 35 | Acaponeta | Tl. | Tlaxcalán, Cholulán, Huexotzinco |
| Tar. | Tarahumar | 36 | Centispac | | |
| Tep. | Tepehuán | 37 | Xalisco | Mixt. | Mixtecapán |
| Ac. | Acaxee-Xixime, etc. | 38 | Cazcan | Tzap. | Tzapotecapán |
| Nay. | Cora, Huichol, Tepecano, Colotlán | Mich. | Michoacán | M-Z. | Mixe-Zoque |
| | | | | Ch. | Chiapanec |

superseding the older maps of Spinden and Wissler which assumed northern interior Mexico as agricultural. Other interpretations embodied in the Mendizábal map are referred to in the discussion of the several areas.

### *Archaeology*

The outstanding archaeological facts are of different order for the interior and coast. In the interior, groups of notable ruins are known from three areas on the eastern or inner slopes or foot of the Sierra Madre. All three of these groups of structures seem to have been abandoned before Spanish discovery; and all of them were in or near territory held by nonagricultural tribes. A recession of culture had thus evidently occurred along the western edge of the interior basin. Also, this strip is indicated as one possibly important corridor of culture flow between central Mexico and the American Southwest. The three areas of ruins are:

1. In or about western Zacatecas: La Quemada, Totoate, Chalchihuites. These represent Spinden's "Northwest Frontier" of higher Mexican culture. He suggests that they fell into a late Toltecan culture horizon and flourished after 1000 A.D.[28] There are pyramids, masonry, columns, tripod and cloisonné pottery.
2. In Durango, at Zape and Sestin. Pyramidal mounds or terraces and masonry occur; the pottery is undescribed.[29]
3. In Chihuahua, about Casas Grandes.[30] This is generally accepted as a local form of Pueblo culture, whose pottery affiliates both stylistically and temporally with Middle Gila polychrome ware. The adobe structures, although little explored, are obviously of Pueblo type. There seem to be no pyramids. A poor form of the ware, Amsden's "peripheral Casas Grandes," extended westward across the Sierra Madre at least as far as the Bavispe branch of the Yaqui River, in the heart of the historic Opata territory.[31]

It is clear that of these three archaeological groups the southern one in Zacatecas affiliates with central Mexico, the northern one in Chihuahua with the Pueblos. The middle one in Durango is doubtful, though southern connection is suggested.[32]

The Sierra Madre region proper is almost without reported archaeological remains, as are the eastern part of the north-central plateau and the Sierra Madre Oriental.

On the Atlantic coast, information becomes very thin as soon as the Totanac and Huastec habitats in the northern part of the Vera Cruz area are left behind, that is, as soon as cultural North Mexico is entered.

For the west coast, there are explorations by Sauer and Brand[33] and excavations by Isabel Kelly. The most northerly pyramidal mounds seem to be in the Acaponeta Valley, in northern Nayarit. Sinaloa and Sonora are wholly without pyramids, though they have some low earth mounds; and do not appear to have built in either stone or adobe masonry. In Sinaloa as far north as the Mocorito, various local red-on-buff, polychrome, incised, and other pottery wares occur. Overlapping sequences of these have been determined for Chametla and Culiacán by Kelly.[34] The pottery is wholly lacking in Pueblo resemblances. It also shows no specific resemblances to Valley of Mexico or "Tarascan" types. Its affinities may lie southward along the west coast; but this is a pure guess, because the coastal wares from Nayarit to Oaxaca are unknown. Sinaloan stone axes and metates are respectively three-quarter grooved and unlegged. This fact must not be overstressed as a specific Pueblo resemblance, since the same types of ax and metate prevail through the Gila, Sonora, Chihuahua, Durango, and Zacatecas regions.[35] So far we are in the coast plain of southern and central Sinaloa, in territory of non-Nahua Uto-Aztecan groups whom Sauer designates as Totorame and Tahue.[36]

---

[28] Ancient Civilizations of Mexico and C. A., 169, 1922. Lehmann, Die Sprachen Zentral-Amerikas, 1920, map, legend, also refers to connections with Teotihuacán. Hrdlička, AA 5:385–440, 1903, adds also, in Bolaños Valley in Jalisco: Mesitas near Nostic and Totoate, Banco de las Casas, Mesa del Encanto, Cerro de Colotlán, etc.; in Tlaltenango Valley in Zacatecas: Teul, etc.; in Juchipila Valley in Zacatecas: Las Ventanas, Pueblo Viejo, etc. The firsthand reports are by Gamio, Anales Museo Nacional, 2, 1910, and Noguera, Publ. Secr. Educ. Pública, 1930.

[29] E. Guillemin Tarayre, Arch. Comm. Sci. du Mexique (ser. 3), 3:183–185, 1869.

[30] H. A. Carey, AA 33:325–374, 1931; A. V. Kidder, Holmes Anniv. Vol., 253–268, 1916, and Southwestern Arch., 115–118, 1924. Also D. D. Brand, AA 37:287–305, 1935.

[31] Southwest Museum Papers, no. 1, 1928.

[32] J. A. Mason, Late Archaeological Sites from Chalchihuites to Zape, in 25th Anniv. Studies, Phila. Anthr. Soc., 127–146, 1937. Mason finds the Zape culture meager.

[33] C. O. Sauer and D. D. Brand, Aztatlán, UC–IA no. 1, 1932.

Beyond the Mocorito, and beginning with the Sinaloa (Petatlán) River, with entry into Cáhita and continuing through Pima and Opata territory, the prehistoric culture is replaced by a simpler one. Pottery no longer contains even occasional tripods, nor is it generally painted or decorated. Archaeological remains are unusually meager. This lower-level culture prevails through northern Sinaloa and nearly all Sonora[37] except the northeast corner of the state.

The west coast thus seems excluded, unless archaeological discoveries of a wholly new type are made there in future, from having been one of the corridors along which specific Central Mexican culture flowed in serious quantity to the Hohokam and Pueblos; although at an earlier time agriculture might have worked north along this coast.

---

[34] Excavations at Chametla, Sinaloa, UC–IA no. 14, 1938. Her Culiacán report is in press.

[35] Cf. Seler, Gesamm. Abhandlungen, 3:545–559, 1908, for grooved axes at La Quemada in Zacatecas. The type of metate there seems undescribed, but for the other regions it is established as a slab without legs. In other words, the tripod metate appears to have had little if any occurrence north of the Mesa Central or the higher Mexican culture.

[36] This and the following paragraph are of 1936.

[37] The basic paper for northern Sonora is by Sauer and Brand, Prehistoric Settlements of Sonora, with Special Reference to Cerros de Trincheras, UC–PG 5:67–148, 1931, a valuable complement to their Aztatlán, UC–IA no. 1, 1932, for Sinaloa. Brand has summarized and compared some of the findings in The Distribution of Pottery Types in Northwestern Mexico, AA 37:287–305, 1935. In the Magdalena-Altar drainage occur the terraced Trincheras habitations. With these is associated a purple-on-red Trincheras pottery ware, which has been found north to Nogales, south not quite to Hermosillo, east to include the San Miguel branch of the Sonora. In the center of the area, around Altar, occurs Trincheras polychrome. The Trincheras type appears to be contemporary with the Casas Grandes polychrome pottery of Chihuahua. Between the two, on the upper Sonora and Moctezuma, occurs a coarse, unpainted, little known "Rio Sonora" ware. Gila red-on-buff pottery (Hohokam) has a distribution almost exactly exclusive of Trincheras on the north. East of the latter it occurs some 60 miles south of the American boundary, to Arispe and Fronteras; 100 miles still farther south, at Sahuaripa, red-on-buff sherds have been found which Brand and Sauer tentatively ally to Hohokam red-on-buff, but which seem to me convergent rather than related. All the wares mentioned occur west of 107° and north of 29°. Central-South Mexican pottery ends at 25° on the west coast. Between 25° and 29°, in the Cáhita-Tarahumar-Northern Tepehuán area, neither painted pottery nor stone or adobe structures have been reported.

### *Language*[38]

In speech, northern Mexico is predominantly Uto-Aztecan. Members of this family held all the Sierra Madre and most of the interior plateau and west-coast regions. Non-Uto-Aztecan languages characterize the eastern part of the area: Pame, Janambre, Olive, Tamaulipec, Coahuiltec. None of these is well known and some are unknown and probably extinct. The other non-Uto-Aztecan languages are those of certain Apache and Lipan divisions on the United States frontier, the Seri along part of the coast of Sonora, and the Yuman (and other?) idioms of peninsular California.

Of the Uto-Aztecan languages the eastern ones, Concho, Lagunero, Zacatec, Guachichil, Acaxee, Xixime, and Teul-Cazcan, are gone and practically unknown. The others belong mainly to the "Sonoran" division (Powell's "Piman family"), but some to the Nahuan; the Shoshonean division is unrepresented in Mexico.

Nahua or "Mexicano" speech is carried by Orozco y Berra, and Thomas and Swanton, through Jalisco and up the length of Sinaloa to the Sinaloa River and in an angle up this stream. This speech is not yet quite extinct in certain spots in Sinaloa;[39] but it was imported by the Spaniards: colonies of Tlaxcalans. Sauer has shown conclusively[40] that nowhere in Sinaloa was Nahua or any Nahua dialect the native language. He has also therewith raised the question of how far the same condition applied to Jalisco and environs. The presence of Aztec place names proves very little, because these were introduced by the Nahua allies, interpreters, and followers of the Spaniards; as in Mayan Guatemala. On the other hand, a prevalence of non-Nahua place names, or even a heavy minority of them, is fair indication that the pre-Conquest native speech of an area was not Nahua. On this basis, the whole of Sinaloa was non-Nahua, though no doubt Uto-Aztecan. In fact, the error of Orozco y Berra seems to have been to force early statements that such-and-such language was "corrupt Mexicano" or "barbarous Aztec" into its construal as Nahua, whereas probably nothing more was intended than a statement of similarity or relationship—in modern terms, being Uto-Aztecan.

At any rate, it now seems established that north of the Santiago no Nahua was known before the Spanish conquest and that all the Uto-Aztecan languages were "Sonoran," to fall back on Buschmann's and Brinton's old term: that is, non-Nahua and non-Shoshonean. But Sonoran in turn appears to denote no true speech entity: it is only geographically descriptive, and inaccurate at that, since it covers Chihuahua, Durango, Sinaloa, Nayarit, etc., also.

The non-Shoshonean, non-Nahua Uto-Aztecan languages fall into at least three groups: Pima-Tepehuán; Cáhita-Opata-Tarahumar; Cora-Huichol. Of these, Pima-Tepehuán is much the most differentiated. There is some warrant for opposing it to all other Uto-Aztecan–"Sonoran," Nahuan, Shoshonean combined.[41] The Pima-Tepehuán distribution is peculiar: a belt or ribbon from the Gila to the Santiago, eight hundred miles in an air line, with a single interruption of a tenth that distance around the upper Fuerte; never touching the sea except in the desert of the Papaguería, yet lying on the west of the Sierra Madre north of the brief break, and on its east flank to the south; altogether a unique distribution in North America.[42] The component languages, which are closely similar, are Papago, Pima Alto and Bajo, Tepehuán, Tepecano.

---

[38] These eight paragraphs on northwestern Mexican languages were rewritten in 1936.

[39] Kroeber, Uto-Aztecan Languages of Mexico, UC–IA no. 8:2, 18, 1934.

[40] The Distribution of Aboriginal Tribes and Languages in Northwestern Mexico, UC–IA no. 5, 1934. This study is basic for ethnic determinations in the area, as the same author's Aztatlán (with Brand, UC–IA no. 1, 1932) and Aboriginal Population of Northwestern Mexico (UC–IA no. 10, 1935) are for archaeology and population. The whole picture of tribal identities, territories, and relationships is changed from the familiar Orozco y Berra and Thomas-Swanton line-up. Sauer's large-scale map should be used throughout to correct the northwestern Mexican part of my map 1.

The Cáhita-Opata-Tarahumar group includes, besides these three languages and their dialects, Concho, far in the interior; Huarejía or Varohío on the Mayo; and others, known only by name or ethnically, as far south probably as the Tahue on the coast and the Acaxee and Xixime of the Sierra in Sinaloa; that is, to about latitude 23°.[43]

The Cora-Huichol group lies, on the whole, south of the two foregoing. With Cora there was probably allied Totorame or Pinome (Nahua for "barbarian") of the coast; with Huichol, neighboring Tecual, and Guachichil well to the east in San Luis Potosí. Cora has been suspected of leaning somewhat toward Pima-Tepehuán; Huichol, toward Nahua; the unity of the group seems somewhat uncertain.[44]

From latitude 28° in the interior plateau not far south of the Rio Grande to latitude 18° on the Pacific coast there was a long stretch of languages generally classed as Uto-Aztecan on the strength of statements by conquerors and missionaries, but without any preserved speech material. These include Lagunero, Zacatec, Teul, Cazcan, and the "Mexicano" of Jalisco and Colima.

### *Areas*

The foregoing findings in connection with the general data available suggest the following culture areas in northern Mexico, asterisks designating those already reviewed in connection with United States areas.

14. South Sinaloa, or Aztatlán-Culiacán: Presumably Uto-Aztecan, but precise affiliations uncertain.

* Fuerte-Yaqui Lowland (area C3): Cáhita. Beals's Old Sinaloa.

* Sonora Coast (area C6): Serian tribes.

* Sonora, except so far as included in last (area C4): Pima, Opata. Beals's Old Sonora.

---

[41] UC–IA no. 8, 1934, p. 6. Recognized by J. A. Mason, Tepecano, Ann. N. Y. Acad. Sci., 25:309–416, 1917; confirmed by B. L. Whorf, The Comparative Linguistics of Uto-Aztecan, AA 37:600–608, 1935 (a fundamental outline).

[42] Maps in UC–IA no. 5:1, and UC–IA no. 8:28.

[43] Fuller review of Sonoran as a whole in UC–IA no. 8; and, independently by J. A. Mason, Classification of Sonoran Languages, pp. 183–196 of Essays in Anthr., UC, 1936; the latter with an appendix by Whorf, in which he suggests "Taracahitian" for the cumbersome Cáhita-Opata-Tarahumar. Both Mason and I believe this group to be on the whole the nearest to original Uto-Aztecan.

[44] Closer relation of Cora and Tepehuán-Pima is asserted in old Spanish statements, and reflected in Orozco, p. 39, and Sauer, UC–IA no. 5:82. Whorf, in AA as just cited, sees no ground for my doubting (UC–IA no. 8:9) that Cora and Huichol form a true group or my suspecting that Huichol leans toward Nahua; nor does Mason.

15. Sierra del Nayarit, or Southern Sierra Madre: Cora, Huichol, perhaps Tepecano and Teul (Cazcan). Part of Beals's Southern Sierra.

16. Central Sierra Madre: Acaxee, Xixime, Tepehuán. Part of Beals's Southern Sierra.

* Northern Sierra Madre (area C5): Tarahumar.

17. North Mexican Interior Plateau: Zacatec, Guachichil, Pame, Janambre, Lagunero, Concho, perhaps the Athabascan "Toboso." Beals's Nomads and Central Agriculturists.

18. Tamaulipas: Tamaulipec, Olive, Coahuiltec. With South Texas area (E3), forms the larger Northwest Gulf Coast area.

### 14. SOUTH SINALOA: AZTATLAN-CULIACAN

Sinaloa north to include the Mocorito, with the northern coastal part of Nayarit about as far south as the mouth of the Rio Grande (Santiago), forms a well-marked Uto-Aztecan-speaking cultural unit, with a substantially uniform archaeology. Sauer has shown[45] that speech was almost certainly "Sonoran" and not Nahua in type. Also, according to him, both documentary sources and prehistoric remains suggest a minor cleavage at the Piaxtla, but this seems of secondary significance. The districts of Aztatlán (Centispac, Chametla) and Culiacán seem to have been the ones of most importance, respectively south and north of the Piaxtla, in the opinion of the early Spaniards and according to the abundance of remains. The Piaxtla Valley itself was less populous, and marked a change of subculture and speech.[46] The culture of the whole area is marginal Mexican, not Southwestern. The pottery is of generic south or central Mexican rather than Gila or Pueblo type. Metal, though extremely scanty in the archaeological remains, is mentioned in the first historic records. The northern boundary of this area therefore marks the frontier between cultural Mexico and the larger Southwest.

Beyond this frontier, from the Sinaloa to the Fuerte, the maps show a "shatter belt" of small groups adjacent to the Cáhita. Of almost none of these do speech specimens seem to have been recorded. It is a question, therefore, of how historical references to their distinctness, or that of their speakers, should be interpreted. They may all have been Cáhita dialects. Sauer discusses the relevant but partly indirect evidence,[47] which will have to be sifted pretty closely before a decisive conclusion can be reached.

Mendizábal[48] (map 17) distinguishes between an area of "pequeños estados" stretching from Lake Chapala and the Tarascan frontier north to include the province of Culiacán, and an area to the north and east thereof inhabited by "grupos prepolíticos." These last are, beyond Culiacán, numerous small tribes possibly all of Cáhita affiliation; and, on the interior side, the Acaxee group and the Tepehuán. The northern frontier of Culiacán seems to be put at the Sinaloa. The "small states" are, in order southward along the coast, Culiacán, Cosalá (partly equivalent to Sauer's Tacuichamona), Chiametla, Acaponeta, Centispac, Xalisco, and thence others inland. Of those named, Xalisco falls into my Jalisco Lowland area; the others equate with the present one.

---

[45] UC–IA no. 5, as cited.

[46] Aztatlán, UC–IA no. 1. In UC–IA no. 5 the northern subarea is assigned to the Tahue, of Cáhita-Opata-Tarahumar affinities; the southern to the Pinome or Totorame, who spoke Cora.

[47] UC–IA no. 5. [48] As cited above, note 27, p. 119.

The South Sinaloa area is relatively uniform in physiography and vegetation, though many of its features also extend farther north and perhaps south. The climate passes gradually from savanna in the south to steppe type in the north. The plant cover is a thorny, deciduous, scrub forest with cardón and pitahaya cactus admixture, known as monte, adapted to dry winters and hot, fairly rainy summers.[49] The range of elevation is not great enough to cause serious local variation in this type of vegetation. The most prosperous settlements were on the lower courses of the larger of the fair-sized rivers, whose course is transverse to the coast; or in the south on the drowned lagoons.

Much of the vegetation continues northward into Sonora, but, on account of greater aridity, only at higher levels there, the more coastward belts being covered first with a mesquite-and-grass association and then with succulent desert type vegetation. In the Cáhita area, the Fuerte, Mayo, and Yaqui rivers are larger than those of Sinaloa, and their bottom lands afforded the characteristic habitat of the area at least as much as in Sinaloa. At any rate, the Cáhita were definite lowlanders, whereas the Sinaloans lived up into the hills, though their settlements, too, tended to cling to the watercourses.

### 15. SIERRA DEL NAYARIT: SOUTHERN SIERRA MADRE

In the region of the Sierra del Nayarit, where the states of Nayarit, Jalisco, and Zacatecas adjoin, three tribes have maintained enough of their ancient culture to have made successful ethnological studies possible: of the Huichol by Lumholtz and Zingg, the Cora by Preuss, the Tepecano by Mason and Hrdlička. This is the only even semiaboriginal ethnology of moment secured in modern times between the Tarahumar and the Lacandón. It is therefore easy to overrate the importance of these three mountain tribes in the aboriginal scheme of culture.

The Huichol, Cora, Tepecano, and Teul or Cazcan are here united in a group, the last two with some hesitation. The culture is the fundamental Mexican one in simple form. It is not Southwestern: specific or characteristic Pueblo traits are rare in it; Aztec ones are recognizable.

The peoples assumed to form this culture group belong to quite different branches of Uto-Aztecan, and therefore have had separate ethnic histories at some time in the past. The Tepecano, as Mason has shown, belong to the Pima-Tepehuán division of Uto-Aztecan speech. The Cora seem to lean rather to this than to the Cáhita-Opata-Tarahumar-Concho division, but are generally united with Huichol to form a third group. The place of the Teul language is unknown.[50]

The region is mountainous, running the usual gamut from hot-canyon dry-winter vegetation to pines along the summits.

---

[49] Harshberger includes most of Sinaloa in his Sonoran Desert region (4a, map 2), within which he recognizes a "Yuman" and a "Sinaloan" district. The latter he extends south "almost to latitude 25°," though his map puts the southern boundary against the Jaliscan region (30c) somewhat north of 26°.

Sauer and Brand's Aztatlán, UC–IA no. 1, 1932, reviews all geographical aspects of the area.

[50] If teul = teotl, the speech may have been of Nahua type. But Orozco y Berra, 279, unites it with Tepecano; which Mason, Tepecano, 312, seems to accept.

The Chalchihuites-La Quemada archaeological zone of ruins lies outside this region as it has been delimited on the basis of ethnolinguistic mapping; but only just outside, in the adjacent parts of Zacatec territory.[51] It is possible that the western Zacatec should be reckoned in the present area, rather than with the non- or subagricultural interior plateau.[52] Or, an old intensively farming culture of larger area may have shrunk into the historic Nayarit area, leaving the ruins outside its boundary.

## 16. CENTRAL SIERRA MADRE

This is the country looking down on the Sinaloa area on one side and on the interior plateau on the other: roughly, western Durango. It is rugged, and much of it is in the pines. It was rather thinly populated by divisions of the Acaxee and Xixime groups, poor mountaineers and fierce cannibals in chronic warfare with each other as well as with their neighbors, and long since extinct.[53] With them, probably, are to be reckoned the Tepehuán, whose territory half surrounds that of the Acaxee on the interior side.

Beals's "Southern Sierra" area includes this as well as the preceding one.

The Zape ruins lie near the old boundary between Acaxee and Tepehuán, but suggest a once more prosperous population than either of these two historic groups.

According to my classification, the boundary between the Central and Northern Sierra areas, or between Tepehuán and Tarahumar, would also demark the Mexican and Southwestern spheres. This may seem artificial, and in a measure no doubt is so. But the Tepehuán and timid Tarahumar differed in disposition, and spoke Sonoran languages of different divisions. Beals also finds definite cultural distinctness, including a notably smaller Mexican element in the northern area.

## 17. NORTH MEXICAN INTERIOR PLATEAU

This is a large tract, roughly coinciding with the north-central interior or desert-plateau physiographic area (maps 7, 22, 23), and extending from the Otomí, Jalisco Highland, and Sierra del Nayarit cultural areas on the south to the Rio Grande on the north. It centers in the largest and middle one of the three great Mexican land-locked drainages, the Mapimí-Parras Basin. It includes also the extensive drainage of the Conchos, a Rio Grande affluent; and parts of the upper drainages of the Santiago (Río Grande del Sur) and

---

[51] Sauer, Tribes and Languages, UC–IA no. 5:55, 1934, cites an early seventeenth-century document as listing Chalchihuites as just within the Tepehuán frontier against the Zacatec.

[52] There would be the more reason for this if the Guachichil, farther east in San Luis Potosí, were Huichol; in fact, the culture provinces of this part of Mexico might then have to be reconstituted. The evidences are three: 1, similarity of the names Huichol and Guachichil; 2, Spanish statements or conjectures (cf. Sauer, Tribes and Languages, 7, 81), mostly not very decisive; 3, the fact that the modern Huichol make a long ceremonial pilgrimage into San Luis Potosí to obtain peyote. Perhaps we are dealing with two related peoples rather than one. One brief Guachichil vocabulary would prove more than all the half-evidence in hand. The uncertainty is typical of most ethnological problems of fact in those areas of Mexico in which local culture and speech have disappeared. It should serve as a reminder of how tentative all classifications here advanced really are.

[53] Beals has compiled from the earlier sources a coherent ethnological picture of Acaxee culture in UC–IA no. 6, 1933.

Pánuco. It is an intermountain plateau averaging 3000 feet lower in the north than in the south; subarid to desert in climate. Shelford, for instance (map 3), classifies the vegetation as grassland, small-tree semidesert, succulent desert, and extreme desert, with, on the whole, increasingly arid types toward the north. Sanders (map 5) labels the plant cover mesquite-cactus scrub, except for short-grass areas on the lower Conchos and Nazas, and desert to the west of these. The area is similar to the Pueblo Southwest in being an intermountain one of low precipitation.[54] But it lies lower and extends into the tropics.

Culturally this area is a provisional one. It seems too large, especially too long from the south to north, to have formed a true unit. The difficulty is that all the included peoples are too little known to make any present scheme of subdivision satisfactory. Beals distinguishes two groups of "Central Agriculturists" on the Nazas and Conchos from the remainder of his "Northern Interior Plateau." It seems somewhat questionable whether presence and absence of agriculture is properly construable as the basic criterion of culture cleavages in this area. Apparently only some of the Lagunero and Concho are in question as farming. Even if these two groups occupied all the territory assigned to them on the map, they would have been able to farm only small fractions of it, unless they were unusually skillful and addicted agriculturists. It is likely that the situation was as among the Yuman tribes of northwestern Arizona, and again as among the western Apache, where all divisions were willing to farm but only some were able to do so, and yet the culture as a whole, apart from the agriculture, was rather thoroughly uniform. So, on the northern Mexican plateau, the primary cultural unity and its segregations may well have been on the basis of factors other than agriculture or its absence. It is therefore possible that fuller knowledge may not only split up this area, but also may link certain parts of it primarily with other areas.

Thus the western part of the state of Zacatecas, from La Quemada to Chalchihuites, at the time these ruins were inhabited, must have harbored several fairly successful concentrations of population practicing intensive farming, with their cultural affiliations perhaps much stronger to the south than with most of the tribes in the northern plateau.

In the southeast, the Pame have been included in the area essentially on guess.

---

[54] According to a preliminary rainfall map by Huntington in Geogr. Rev., 11:255, 1921, the towns of Durango, Zacatecas, Aguas Calientes, Guanajuato, Querétaro, with a precipitation of about 20 inches, may be taken as marking the western edge of the dry interior. Nogales, Chihuahua, San Luis Potosí, Pachuca, Saltillo (but not Monterrey), and Nuevo Laredo have a precipitation of less than 20 inches. The area with less than 10 inches of rainfall is enclosed by a line crossing the Rio Grande near the mouth of the Pecos and more or less following longitude 102° to about 24° or 25° latitude, where it turns northwestward to reënter the United States around 108°. This low-precipitation area roughly coincides with western Coahuila and eastern Chihuahua. It also is about coextensive with Sanders' and Shelford's desert vegetation areas; the tribes within it were parts of the Conchos and Laguneros (who farmed so far as they lived in the "grasslands" along the streams) and the Athabascan Toboso (Lipan Apache ?). Nearly all the area with rainfall of less than 20 inches was nonagricultural; and so was a better-watered stretch (precipitation up to 40 or 50 inches) in the region of the ill-defined "Sierra Madre Oriental" (Eastern Escarpment) in Tamaulipas and Nuevo León. Evidently, cultural associations had as much influence as rainfall in determining whether or not a given locality farmed—much as in southern Texas.

In the north, it is unlikely that the North Mexican Plateau culture had its boundary at the actual Rio Grande.

On the northeast, however, part of the territory of the Coahuiltecan-speaking tribes should perhaps have been added to the area. My Northwest Gulf Coast area, following the linguistic map, bows inland too far here, so as to include Nuevo León and part of Coahuila. A physiographic demarcation nearer the coast is suggested: probably along the line of the escarpment ("Sierra Madre Oriental") separating the plateau from the coast plain.

### 18. TAMAULIPAS: NORTHWEST GULF COAST

Near Tampico at the mouth of the Pánuco, or a little to the north, climate, vegetation, speech, and culture change on the Gulf coast.[55] The plant cover of Tamaulipas is variously classed: as divided between short grass and scrub; as small-tree semidesert; and as "Gulf Mexican" (maps 2, 3, 5). Mayan Huastec is replaced by almost unknown languages labeled Olive, Tamaulipec, Coahuiltec. Stone or lime-concrete pyramids are said no longer to appear. The general culture was conspicuously backward as compared with south of the Pánuco; close to South Texan in level and probably in content. These two areas seem to constitute essentially one major area, for which Northwest Gulf Coast would be an appropriate name.

To be sure, it is certain that culture was not uniform, and probably not even substantially uniform, from the Pánuco to the Mississippi. The stretch is too long; the affiliations at the two ends—with Huastec and Natchez—too diverse. The difficulty is in drawing divisions when all the cultures in the stretch are so little known. The most important boundary probably did not fall at the Rio Grande: both because native culture frontiers in America rarely follow streams, and because the Coahuiltec speech unit sat astride this river. Provisionally, I therefore include the Coahuiltec in the Tamaulipas area, thus counting the southern tip of Texas as part of cultural Mexico.[56]

If we refuse to regard the Rio Grande as a frontier, the same should hold for the Pánuco. It is improbable that semicivilized Huastec looked across this river upon savages on the northern bank. Ruins in fact extend at least into southernmost Tamaulipas, and Beals and Mendizábal both rate the southeastern part of the state as agricultural.

The interior line has been left following the boundary which the maps assign to Coahuiltecan speech, but, as already mentioned in the last section, this may be too far inland for the culture frontier.

---

[55] The rainfall, according to Huntington, as cited, exceeds 70 inches on the coast in latitude 20°, exceeds 50 in 22°, is less than 30 in 24°. Sanders, map 5, has "jungle" vegetation, backed by deciduous forest, along the coast to the Pánuco; thence to the Rio Grande, a narrowing belt of grassland with mesquite scrub inland.

[56] J. A. Mason, in "Teocentli" (privately circulated), says that the prehistoric pottery of the coast between Rockport (28°) and Brownsville (26°) shows Huaxtec traits; and that on the Tamaulipas coast as far south as Soto la Marina (24°) he found Huaxtec objects, probably trade pieces, but no ruins.

See also E. B. Sayles, An Archaeological Survey of Texas, Medallion Papers, no. 17, 1935, with references to papers by A. E. Anderson, G. C. Martin, and W. H. Potter in Bulls. 1–4 of Tex. Arch. and Pal. Soc. of Abilene.

## XI. POPULATION[1]

A POSTHUMOUS WORK by James Mooney[2] makes available the first careful and complete tribe-by-tribe series of estimates of the native population of America, north of present-day Mexico, for the period of early contact of each group with settling Caucasians. This invaluable study makes possible the examination of population density in terms of cultural or other areas, as indicated in the analyses attempted in the present section.

The Mooney figures are here used with one consistent modification—a substitution of my total of 133,000 for California[3] in place of C. H. Merriam's[4] 260,000 which Mooney took over; hence with a reduction of the total for the continent north of Mexico from 1,152,950 to 1,025,950, or about 10 per cent. I have made this substitution not because I wish to give my figure precedence over Merriam's, but because my total is arrived at through a tribe-by-tribe addition or "dead-reckoning" method, like all Mooney's other figures; whereas Merriam uses a mission to nonmission area multiplication ratio for the state as a whole.[5]

I have converted Mooney's data for tribes and bands into terms of my own ethnic groups as defined in map 1. For instance, his Massachuset, Wampanoag, Nauset, Nantucket, Martha's Vineyard, Narraganset and eastern Niantic, with populations of 3000, 2400, 1200, 1500, 1500, 4000, are listed simply as Massachuset, 13,600. Sometimes he gives only combined figures for tribes which I keep separate; thus, (Southern) Paiute and Paviotso. Accordingly there are overlaps as well as omissions; and an exactly authentic check-up on the conversion from his scheme is difficult. The result is that my totals fall about 10,000 below his.[6] This is an error of 1 per cent. But since the best of Mooney's estimates can hardly pretend to be nearer than by 10 per cent to the probable truth, and some may be 50 per cent or more from it, my discrepancy can be allowed as of negligible significance. It is of still less moment so far as it enters into population densities, because the exact area of many tribal territories is as imperfectly known as the numbers of their inhabitants.

All the following data and discussions, in short, are necessarily approximate and preliminary. What is needed is, first, a generally accepted classification of tribes or ethnic groups; second, a more precise determination of their territories; and third, a new series of estimates, both by local specialists and by those interested in demographic problems as such, of the size of tribal populations. These studies will probably involve a number of workers and a number of years. Only then can anything like reasonable reliability in detail be expected.

---

[1] A reduction of this section on population has been printed in AA 36:1–25, 1934. A review of pertinent literature which has appeared since 1931 is given at the end of the section.

[2] The Aboriginal Population of America North of Mexico, SI–MC 80, no. 7 (publ. 2955), 1928; edited by J. R. Swanton. This is a brief version of a contemplated large monograph, for which Mooney had studies under way before 1908, but of which by his death in 1921 he had completed only the section dealing with the Indians of the states from Maine to Pennsylvania. The brief article, "Population," in the Handbook of American Indians contains only totals by countries.

[3] BAE–B 78:880–891, 1925.

[4] The Indian Population of California, AA 7:594–606, 1905.

[5] Mooney apparently had not himself worked at the data for California, and therefore took over Merriam's result in block, with the result that this is his one area without figures for separate tribes or groups. My computation appeared after his work was done.

[6] Mooney, corrected for California, 1,025,950; aggregate totals in my analyses below, 1,000,880; plus 15,000 Coahuiltec not counted in, 1,015,880; difference, 10,070.

The areas in the lists that follow were calculated by planimeter on the original draft of map 1. The United States Geological Survey base from which this map was taken is on a polyconic projection. Equal areas in different parts are therefore not shown quite equal, the relative diminution from center to sides gradually increasing up to perhaps 6 or 8 per cent. In the present preliminary stage of the study it has not seemed worth while to compute the correction attributable to each area. A cartographer interested in sufficient refinement of results can easily estimate these corrections. The planimeter results also diminish in accuracy inversely to size of area measured. For California, therefore, where tribal areas are unusually small, measurements were made on a larger base map and converted back to the general scale by ratio multiplication. A general check was also made of all areas whose measured size seemed to differ notably from that expectable by eye, through superposing transparent paper ruled in millimeters and counting squares. As the base map was on a scale of 1:10,000,000, each square millimeter was the equivalent of 100 square kilometers, to which unit the planimeter was also read.

It seemed best to compute densities in terms of this same unit of 100 square kilometers. Square kilometers would throughout have yielded only a fraction of a person per unit. Square miles would not have been much better, besides necessitating recomputation with possibility of error. For American readers the unit of 100 square kilometers has the advantage that it nearly equals a standard United States surveyed township of 6 by 6 miles, 100 square kilometers being 38.51 square miles, or about 7 per cent more than a township. A density of 15 in the following lists is therefore about equal to 14 per township—a difference usually much less than the probable error of accuracy. The township comparison may help make the results more vivid to those familiar with Caucasian land settlement in the United States.

## Discussion of Mooney's Figures

Mooney's figures are probably mostly too high rather than too low, so far as they are in error. This is the opinion of Swanton, his posthumous editor. Mooney himself was apparently reducing estimates as his work progressed. Swanton mentions an earlier figure of 32,700 for New England as compared with the final one of 25,100.[7] For part of the Southeast, Swanton's independent computation is 44,385, Mooney's 62,400.[8] Mooney allows 33,800 Pueblos, Kidder 20,000.[9] Following are some comments of my own, prevalently in the same direction.

---

[7] C. C. Willoughby, Antiquities of the New England Indians, PM–P, 1935, estimates 24,000 for the beginning of the seventeenth century.

[8] Mooney, p. 9.

[9] Southwestern Archaeology, 39, 1924. "About 20,000" in some seventy towns at the time of the Spanish conquest.

Mooney gives my Algonkin Massachuset division 13,600 souls, the combined Abnaki, Pennacook, Nipmuc, Pequot, Wappinger, and Mahican, 18,300: in other words, nearly as many Indians in eastern Massachusetts and Rhode Island as in all the rest of New England plus adjacent parts of New York and New Brunswick;[10] which seems somewhat extreme, although in accord with the tendency toward heavier population on favorable shore lines.

The Montauk or Long Island tribes at 6000 also seem high.

Among the northern Iroquoian tribes, the Iroquois proper are put disproportionately low, perhaps under the influence of Hewitt, who seems to have been impressed by the humble beginnings of the great confederacy. The figures are: Huron and Tionontati, 18,000; Neutral, 10,000; Conestoga, 5000; Iroquois, 5500. This is but a little more than a thousand each for the five Iroquois tribes in 1600.

In the Southeast, the Creek (including the later Seminole) are allotted 18,000 in 1650, the Chickasaw 7000. Swanton's figures are 7000 and 3000–3500. Mooney was probably impressed by the importance of these groups in the period of relations with the English, when the Creek especially had become residuary legatees of moribund tribes; and he projected their importance and size backward. For the Choctaw, Mooney and Swanton agree on 15,000, which in view of their territory seems a fairly high figure.

In the Plains, Mooney's figures for 1780 appear on the whole well proportioned, though the following may be queried: 35,000 Dakota and Assiniboin; Atsina and Arapaho equal with 3000 each; Pawnee 10,000 against all southern Caddoans 13,400.

The Southwest, in which Mooney lacked the experience of intensive work, is more questionable. For 1680 he posits 8000 Navaho, but only 7000 for all Apache groups combined, including the Mescalero and Lipan as of 1750. This is surely a backward projection of recent conditions. As late as the end of the eighteenth century the Spaniards considered the Navaho an Apache subdivision, and by no means the outstanding one. In 1680, and still more in 1580, they are likely to have constituted a third, fourth, or fifth of the Apache total rather than a majority.

Mooney segregates his 33,800 Pueblos into 24,500 of Tanoan stock, 9300 Keres, Zuñi, and Hopi. Among the Tanoans, he allots 9000 to the southern or Piro division, 15,500 to the other divisions. Geographically, he puts 27,000 along the Rio Grande, 6800 west thereof, that is, in Hopi, Zuñi, Acoma, Laguna. This seems an overbalancing against modern conditions. The Rio Grande region, and especially its southern part, undoubtedly declined more than the western Pueblos; but perhaps not so much as he estimates.

Farther west, the Yavapai are given 600, five Yuman tribes on the Colorado 11,000.[11] The fact of disproportion is justly conceived but probably exaggerated. On the basis of Walapai Havasupai data, the Yavapai numbers might perhaps be doubled.

Fifteen thousand for the Coahuiltec bands surely is excessive, in view of their not farming and the nature of the country.

In the Oregon-Washington region, the Salish seem underweighted as against the Sahaptin and Chinook. Thus, United States Salish on coast, 6200; on Puget Sound, 6800; in the interior, including Idaho and Montana, 8700; total, 21,700; Sahaptin, 18,100; Chinook, 22,000; Yaquina, Alsea, Siuslaw, Kus, 8000. The definitely greater heaviness of population on the lower Columbia is indubitable, but perhaps not quite to the degree implied. Also, the Sahaptin, with a smaller territory, are given more than twice the population of the interior Salish in the United States.

In British Columbia, on the contrary, the Salish are favored: on the coast, including 1400 Bella Coola, 21,900; in the interior, 16,500; total, 38,400; all Nutka, Kwakiutl, Tsimshian, Haida, 30,000. This makes 20,500 coast Salish in modern British territory fronting on the Gulf of Georgia, as against only 31,400 population on all the remainder of the coast of British Columbia. Such a distribution would expectably have produced some superior florescence of culture on the Gulf of Georgia. However, as discussed below, Mooney's estimates pretty consistently put the great densities in the southern half of the Northwest Coast, which is not incompatible with the view developed above of a relatively recent seaward and northward shift of the climax of this culture.

---

[10] Willoughby also cites eastern Mass., R. I., Conn., as the most heavily populated.

[11] The Cocopa are omitted, presumably as Mexican. The Yuma also are not mentioned. They may be intended by the "Cajuenche"—really the Kohuana, but perhaps interpreted as a variant form of Kuchan, the native name of the Yuma.

Mooney's 73,700 for the Eskimo proper without the Siberian Yuit, and 16,000 for the Aleut, seem somewhat high.[12] They make the stock the second largest north of Mexico, ahead of Siouan. Mooney puts 6000 in the islands west of Baffinland, which were uninhabited except by groups of the mainland tribes to the south. He allows 40,000 for the Alaska Eskimo exclusive of the Aleut. He gives detailed data for the modern distribution, only, of these 40,000. The tribal figures entered in my table are computed from his decrease ratios for larger areas reapplied to smaller groups. At that, numbers for single groups like 7200 Kuskokwagmiut and 8800 Kaniagmiut seem high as compared to 10,000 Tlingit.

All in all, however, Mooney's estimates and computations have clearly been made on the basis of wide reading, conscientiousness, and experienced judgment. Until some new, equally systematic, and detailed survey is made, it seems best to accept his figures in toto[13] rather than to patch them here and there. My impression is that Mooney's total of about 1,150,000, reduced to 1,025,000 by the California substitution, will ultimately shrink to around 900,000, possibly somewhat farther, but that the respective density ratios of the principal areas will not be very materially affected by the change.

In central and southern Mexico, population is unanimously admitted to have been much heavier than in the United States and Canada combined, but unfortunately there are no systematic group-by-group estimates south of the Rio Grande, and anything like even approximately reliable density mapping is as yet impossible.

## POPULATION AND DENSITY BY TRIBES

The list in table 7 is a conversion of Mooney's estimates into terms of my tribal units, grouped according to cultural areas. The totals for each area will be found in table 8. Map 18 shows the densities by areas.

TABLE 7

TRIBAL POPULATIONS (AFTER MOONEY), TERRITORIAL EXTENT, AND DENSITIES NORTH OF MEXICO

(Totals for areas are given in table 8)

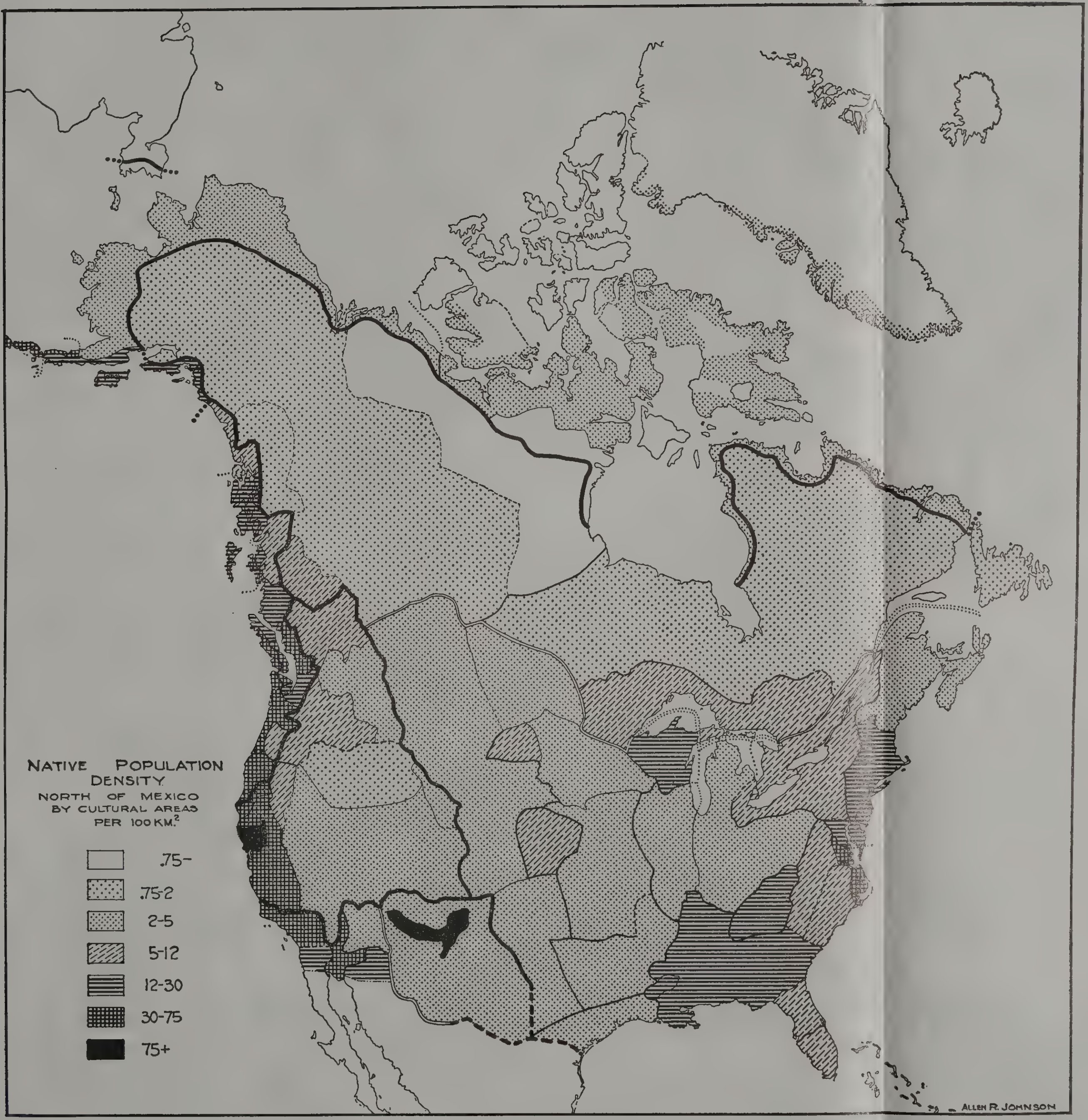
| Culture areas | Tribes | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | ARCTIC COAST | | | |
| 1a | Central-Eastern Eskimo | | | |
| | Greenland | 10,000 | 1,575 | 6.34 |
| | Labrador | 3,600 | 2,077 | 1.73 |
| | Baffinland | 6,000 | 3,706 | 1.62 |
| | West of Baffinland, islands (*sic*) | 6,000 | | |
| | Aivilik, Iglulik, Netsilik | 2,300 | 4,159 | 0.55 |
| | Copper Eskimo | 2,000 | 1,607 | 1.24 |
| | Southampton Island | 300 | 233 | 1.28 |
| 1b | Barren Ground Eskimo | | | |
| | Caribou Eskimo | 700 | 1,700 | 0.41 |

---

[12] Rink, The Eskimo Tribes (Meddelelser om Grönland, 11), 1:32–34, 1887, computes about 29,500 Eskimo excluding Aleut; presumably about the time of writing.

[13] Always excepting California, where he does not deal with separate tribes or groups.

*(Table 7 continued on pages 135 to 141.)*


NATIVE POPULATION DENSITY
NORTH OF MEXICO
BY CULTURAL AREAS
PER 100 KM.$^2$
.75-
.75-2
2-5
5-12
12-30
30-75
75+
ALLEN R. JOHNSON

Map 18. Native Population Densities by Cultural Areas. Compare maps 6 and 28.

TABLE 7—(*Continued*)

| Culture areas | Tribes | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | ARCTIC COAST—(*Continued*) | | | |
| 2a | Western Eskimo | | | |
| | Mackenzie | 2,800 | 800 | 3.50 |
| | Nuwuk, Kopak, Nunatak | 3,000* | 2,036 | 1.47 |
| | Malemiut | 1,600 | 555 | 2.88 |
| | Kinugumiut, Kaviagmiut | 2,800 | 338 | 8.28 |
| | St. Lawrence Island | 600 | 50 | 12.00 |
| | Unaligmiut | 1,600 | 210 | 7.61 |
| | Ikogmiut | 400 | 278 | 1.43 |
| | Magemiut, Kaialigmiut | 5,000 | 491 | 1.01 |
| | Nunivagmiut | 1,500 | 45 | 33.30 |
| | Kuskokwagmiut | 7,200 | 416 | 17.30 |
| | Togiagamiut, Chingik, Nushagak | 1,300 | 665 | 1.95 |
| | Ogulmiut | 3,700 | 511 | 7.24 |
| 2b | Aleut | | | |
| | Aleut | 16,000 | 247 | 64.70 |
| 2c | Pacific Coast Eskimo | | | |
| | Kaniagmiut | 8,800 | 287 | 30.60 |
| | Chugachigmiut | 1,700 | 262 | 6.48 |
| | Ugalakmiut | 800 | 40 | 20.00 |
| | NORTHWEST COAST | | | |
| 1a | Northern Maritime Mainland | | | |
| | Northern Tlingit | 2,500 | 250 | 10.00 |
| 1b | Northern Maritime Archipelago | | | |
| | Southern Tlingit | 7,500 | 742 | 10.10 |
| | Haida | 9,800 | 103 | 95.10 |
| | Tsimshian proper | 3,500 | 110 | 31.80 |
| 1c | Northern Maritime River | | | |
| | Niska, Gitskyan | 3,500 | 381 | 9.18 |
| | Haisla | 1,300 | 80 | 16.20 |
| 2a | Central Maritime, Northern | | | |
| | Heiltsuk | 1,400 | 80 | 17.50 |
| | Bella Coola | 1,400 | 150 | 9.33 |
| | Kwakiutl | 4,500 | 211 | 21.30 |
| 2b | Central Maritime, Southern | | | |
| | Nutka | 6,000 | 91 | 65.90 |
| | Makah, Quileute, Quinault | 4,000 | 62 | 64.50 |
| 3 | Gulf of Georgia | | | |
| | Comox, Pentlatch, Cowlitz, Lkungen, Seshelt, Squamish, Lower Fraser | 20,500 | 607 | 33.70 |
| | Nutsak, Lummi | 800 | 60 | 13.30 |
| | Klallam, Chimakum | 2,400 | 58 | 41.30 |
| 4 | Puget Sound | | | |
| | Skokomish, Nisqualli, Twana, Puyallup, Snoqualmi, Snohomish, Skagit | 6,000 | 357 | 16.80 |

* From here on Mooney gives only three Eskimo aggregates, of 8000, 17,000, and 15,000, for 1740; besides 16,000 Aleut. His total of 40,000 has been allotted according to his tribal figures for survivors in 1900.

TABLE 7—(*Continued*)

| Culture areas | Tribes | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | NORTHWEST COAST—(*Continued*) | | | |
| 5 | Lower Columbia | | | |
| | Tlatskanai | 1,600 | 27 | 59.20 |
| | Lower, Upper Chehalis, Owilapsh, Cowlitz | 1,200 | 182 | 6.59 |
| | Chinook | 22,000 | 148 | 148.60 |
| | Tillamook | 1,500 | 67 | 22.30 |
| | Yaquina, Alsea, Siuslaw | 6,000 | 83 | 72.20 |
| 6 | Willamette Valley | | | |
| | Kalapuya | 3,000 | 334 | 8.98 |
| 7 | Lower Klamath | | | |
| | Southwestern Oregon Athabascans 1–8 | 8,800 | 184 | 47.80 |
| | Kus | 2,000 | 20 | 100.00 |
| | Takelma | 500 | 70 | 7.14 |
| | Tolowa (Cal. Ath. 1) | 1,000 | 21 | 47.60 |
| | Hupa, Chilula (Cal. Ath. 2) | 1,500 | 18 | 83.30 |
| | Yurok | 2,500 | 19 | 131.00 |
| | Karok | 1,500 | 32 | 46.80 |
| | Wiyot | 1,000 | 13 | 76.90 |
| | SOUTHWEST | | | |
| | I. *Pueblo Sphere* | | | |
| 1 | Pueblo | | | |
| | Hopi | 2,800 | 70 | 40.00 |
| | Zuñi | 2,500 | 114 | 21.90 |
| | Keres | 4,000 | 120 | 33.30 |
| | Piro | 9,000 | 85 | 105.80 |
| | Tano, Tewa, Tiwa, Pecos, Jemez | 15,500 | 57 | 271.90 |
| 2a | Inter-Pueblo | | | |
| | Navaho | 8,000 | 842 | 9.50 |
| 2b | Circum-Pueblo | | | |
| | Western, Eastern, Jicarilla Apache, incl. Mex. | 6,500 | 5,588 | 1.16 |
| | II. *Sonora-Gila-Yuma Sphere* | | | |
| 3 | Fuerte-Yaqui Lowland | | | |
| | Yaqui, Mayo, and other Cáhita | | (481†) | |
| 4 | Sonora | | | |
| | Opata<br>Pima in Mexico | | (847†) | |
| | Papago, Mexico and U. S. | 6,600 | 714 | 9.24 |
| | Gila Pima | 4,000 | 150 | 26.60 |
| 5 | Northern Sierra Madre | | | |
| | Tarahumar | | (715†) | |
| 6 | Sonora Coast | | | |
| | Seri, Guaymas, etc. | | (306†) | |
| 7 | Northwest Arizona | | | |
| | Walapai, Havasupai | 1,000 | 261 | 3.83 |
| | Yavapai | 600 | 405 | 1.48 |

† Areas in Mexico. Mentioned here only to leave the list of Southwest areas complete. Not considered by Mooney.

TABLE 7—(*Continued*)

| Culture areas | Tribes | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | SOUTHWEST—(*Continued*) | | | |
| 8 | Lower Colorado River | | | |
| | Mohave, Halchidhoma, Yuma, Halyikwamai, Kohuana, Cocopa, incl. Mex. | 11,000 | 361 | 30.40 |
| | Maricopa | 2,000 | 55 | 36.30 |
| 9 | Peninsular California | | | |
| | E, W Diegueño, Kamia, in U. S. | 3,000 | 166 | 18.10 |
| | Dieg., Kamia in Mex., Akwa'ala, Kiliwa, Cochimí, Waicura, Pericú | | (1,224†) | |
| 10 | Southern California | | | |
| | Desert, Mountain, Pass Cahuilla | 2,500 | 63 | 39.60 |
| | Serrano 1–4 | 3,500 | 293 | 11.90 |
| | Luiseño, Juaneño, Cupeño | 5,500 | 81 | 67.90 |
| | Gabrielino | 5,000 | 77 | 64.90 |
| | Chumash | 10,000 | 169 | 59.10 |
| | INTERMEDIATE AND INTERMOUNTAIN AREAS | | | |
| 1a | Great Basin | | | |
| | Ute, Gosiute | 4,500 | 2,917 | 1.54 |
| | Shoshone, W Shoshone, N Paiute, S Paiute | 7,500 | 3,062 | 2.45 |
| | Chemehuevi | 500 | 452 | 1.10 |
| | Panamint | 500 | 236 | 2.11 |
| | Eastern Mono | 2,000 | 144 | 13.80 |
| | Washo | 1,000 | 62 | 16.10 |
| 1b | Snake-Salmon Drainage | | | |
| | Bannock, N Paiute, Shoshone | 3,000 | 2,886 | 1.04 |
| 1c | Klamath Lakes-Pit River | | | |
| | Klamath, Modoc | 1,200 | 249 | 4.81 |
| | Achomawi, Atsugewi | 3,000 | 171 | 17.50 |
| | Mountain Maidu | 1,000 | 81 | 12.30 |
| 1d | Wind River | | | |
| | Wind River Shoshone | 2,500 | 550 | 4.54 |
| 2a | California | | | |
| | Kato (=Athabascan 7) | 500 | 6 | 83.30 |
| | Yuki, Coast Yuki | 3,000 | 44 | 68.10 |
| | Wintu in Sacramento drainage | 2,000 | 51 | 39.20 |
| | Wintun | 2,500 | 74 | 33.70 |
| | Yana | 1,500 | 48 | 31.30 |
| | Foothill Maidu (incl. Nisenan) | 4,000 | 138 | 28.90 |
| | Plains and Foothill Miwok (1–4) | 9,000 | 190 | 47.30 |
| | Costano, Esselen | 7,500 | 163 | 46.00 |
| | Salinan | 3,000 | 94 | 31.90 |
| | Valley Yokuts | 11,000 | 382 | 28.70 |
| | Foothill Yokuts | 7,000 | 65 | 107.60 |
| | Western Mono | 2,000 | 96 | 20.80 |
| | Tübatulabal | 1,000 | 58 | 17.20 |
| | Kawaiisu | 500 | 42 | 11.90 |

† Areas in Mexico. Mentioned here only to leave the list of Southwest areas complete. Not considered by Mooney.

TABLE 7—(*Continued*)

| Culture areas | Tribes | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | INTERMEDIATE AND INTERMOUNTAIN AREAS—(*Continued*) | | | |
| 2b | California Climax | | | |
| | Pomo | 8,000 | 88 | 90.90 |
| | Coast, Lake Miwok (5–6), Wappo | 3,000 | 47 | 63.80 |
| | Patwin | 6,000 | 96 | 62.50 |
| | Valley Maidu (incl. Nisenan) | 4,000 | 49 | 81.60 |
| 2c | California-Northwest Transition | | | |
| | Nongatl, Mattole, Lassik-Wailaki, Sinkyone (Athab. 3–6) | 4,000 | 71 | 56.40 |
| | Shasta 1–4, Chimariko | 3,000 | 88 | 34.10 |
| | Wintu in Trinity drainage | 1,500 | 51 | 29.40 |
| 3a | Middle Columbia | | | |
| | Klikitat, Yakima, Wanapum, Palus | 11,200 | 390 | 28.70 |
| | Nez Percé | 4,000 | 450 | 8.88 |
| | Tenino, Umatilla, Walla Walla | 2,900 | 642 | 4.51 |
| | Wailatpu | 500 | 93 | 5.37 |
| | Wenatchi, Sinkiuse, Peskwaus, Methow, Nespilim, Sanpoil, Colville, Spokane (part) | 3,500 | 313 | 11.20 |
| 3b | Upper Columbia | | | |
| | Wenatchi-Spokane group (part) | 2,400 | 208 | 11.50 |
| | Kalispel, C.d'A., P.d'O., Flathead | 2,800 | 1,861 | 1.50 |
| | Okanagan, Lake | 2,200 | 410 | 5.36 |
| | Kootenay | 1,200 | 595 | 2.01 |
| 3c | Fraser | | | |
| | Chilcotin | 2,500 | 197 | 12.60 |
| | Lillooet | 4,000 | 170 | 23.50 |
| | Thompson, Nicola | 5,150 | 155 | 33.20 |
| | Shuswap | 5,300 | 1,176 | 4.50 |
| | EAST AND NORTH | | | |
| | I. *East* | | | |
| 1a | Southeast | | | |
| | Stono, Edisto, Cusabo, Yamasi, Guale | 4,400 | 113 | 38.90 |
| | Apalachi, Ap'ola, Chatot, Sawokli, Pawokti, Pensacola | 12,000 | 614 | 19.50 |
| | Mobile | 2,000 | 100 | 20.00 |
| | Creek | 18,000 | 1,476 | 12.20 |
| | Yuchi | 1,500 | 130 | 11.50 |
| | Eastern Shawnee | 1,000 | 78 | 12.80 |
| | Chickasaw | 8,000 | 866 | 9.23 |
| | Choctaw | 15,000 | 683 | 21.90 |
| | Tunica, Ofo | 2,000 | 206 | 9.70 |
| | Ibitupa, Chakchiuma, Taposa | 1,200 | 266 | 4.51 |
| | Biloxi, Pascagula | 1,000 | 88 | 11.30 |
| | Houma, Acolapisa, Washa, Chawasha, Tangipahoa, Bayogula, Kinipisa, Okelusa | 5,400 | 314 | 17.10 |
| | Chitimacha | 3,000 | 94 | 31.90 |

TABLE 7—(*Continued*)

| Culture areas | Tribes | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | EAST AND NORTH—(*Continued*) | | | |
| 1b | Southeast Climax | | | |
| | Natchez, Avoyel, Taensa | 5,300 | 277 | 19.10 |
| 1c | North Florida | | | |
| | Timucua | 8,000 | 678 | 11.70 |
| 2 | South Florida | | | |
| | Calusa | 3,000 | 247 | 12.10 |
| | Ais, Jeaga, Guacara, Tekesta | 1,000 | 295 | 3.38 |
| 3 | (Northwest Gulf Coast) South Texas | | | |
| | Atakapa | 1,500 | 482 | 3.11 |
| | Karankawa | 2,800 | 282 | 9.92 |
| | Tonkawa | 1,600 | 313 | 5.11 |
| | Lipan Apache | 500 | 980 | 0.51 |
| 4a | Red River | | | |
| | Caddo, Wichita, Kichai, Waco, Tawakoni | 13,400 | 2,577 | 5.19 |
| | Quapaw | 2,500 | 680 | 3.67 |
| 4b | Middle Platte | | | |
| | Pawnee | 10,000 | 1,306 | 7.66 |
| 5a | Southern Plains | | | |
| | Kiowa, Kiowa-Apache | 2,300 | 1,682 | 1.36 |
| | Comanche | 7,000 | 1,400 | 5.00 |
| 5b | Northern Plains | | | |
| | Cheyenne, Arapaho | 6,500 | 2,111 | 3.07 |
| | Teton Dakota | 10,000 | 1,700 | 5.88 |
| | Crow | 4,000 | 1,527 | 2.61 |
| | Assiniboin (part) | 2,000 | 343 | 5.83 |
| | Atsina | 3,000 | 814 | 3.68 |
| | Blackfoot, Blood, Piegan | 15,000 | 3,464 | 4.33 |
| | Sarsi | 700 | 937 | .75 |
| 6a | Southern Prairie | | | |
| | Osage | 6,200 | 2,260 | 2.74 |
| | Kansas | 3,000 | 499 | 6.01 |
| | Oto | 900 | 219 | 4.10 |
| | Missouri | 1,000 | 552 | 1.81 |
| | Iowa | 1,200 | 859 | 1.39 |
| | Omaha, Ponca | 3,600 | 300 | 12.00 |
| 6b | Central Prairie | | | |
| | Santee, Yankton, Yanktonai Dakota | 15,000 | 2,996 | 5.01 |
| 6c | Village Prairie | | | |
| | Mandan, Hidatsa | 6,100 | 225 | 27.10 |
| | Arikara | 3,000 | 374 | 8.02 |
| 6d | Northern (Canadian) Prairie | | | |
| | Plains Cree | 3,000 | 1,567 | 1.91 |
| | Plains Ojibwa | 2,000 | 470 | 4.25 |
| | Assiniboin (part) | 8,000 | 1,371 | 5.84 |

TABLE 7—(*Continued*)

| Culture areas | Tribes | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | EAST AND NORTH—(*Continued*) | | | |
| 7 | Wisconsin | | | |
| | Winnebago | 3,800 | 139 | 27.30 |
| | Kickapoo | 2,000 | 155 | 12.90 |
| | Sauk and Fox | 6,500 | 312 | 20.80 |
| | Menomini | 3,000 | 255 | 11.70 |
| | Ojibwa (part) | 3,000 | 600 | 5.00 |
| 8a | Ohio Valley | | | |
| | Miami | 4,500 | 1,242 | 3.63 |
| | Shawnee (western) | 2,000 | 1,100 | 1.82 |
| | Potawatomi | 4,000 | 919 | 4.35 |
| | Uninhabited | | 1,381 | |
| 8b | Illinois | | | |
| | Illinois | 9,500 | 3,065 | 3.09 |
| 9 | Lower Great Lakes | | | |
| | Mohawk, Oneida, Onondaga, Cayuga, Seneca | 5,500 | 734 | 7.49 |
| | Conestoga | 5,000 | 702 | 7.12 |
| | Erie | 4,000 | 1,001 | 3.99 |
| | Neutral | 10,000 | 592 | 16.80 |
| | Huron, Tionontati | 18,000 | 1,392 | 12.90 |
| 10 | North Atlantic Slope | | | |
| | Micmac | 3,500 | 1,508 | 2.32 |
| | Abnaki | 3,800 | 1,777 | 2.14 |
| 11 | Middle Atlantic Slope | | | |
| | Pennacook | 2,000 | 267 | 7.49 |
| | Nipmuc | 1,700 | 125 | 13.60 |
| | Massachuset | 13,600 | 129 | 105.40 |
| | Pequot | 2,200 | 29 | 75.80 |
| | Wappinger | 5,600 | 192 | 29.10 |
| | Montauk | 6,000 | 38 | 157.80 |
| | Mahican | 3,000 | 271 | 11.10 |
| | Delaware | 8,000 | 454 | 17.60 |
| | Nanticoke | 2,000 | 122 | 16.30 |
| | Conoy | 2,700 | 201 | 13.40 |
| 12a, b | South Atlantic Slope, Piedmont and Lowland | | | |
| | Monacan, Manahoac, Mohetan | 2,700 | 311 | 8.68 |
| | Nottoway, Meherrin | 2,200 | 96 | 22.90 |
| | Coree | 1,000 | 30 | 33.30 |
| | Tuscarora | 5,000 | 95 | 52.60 |
| | Occaneechi, Woccon, Sara, Catawba, Eno, Cape Fear, Pedee, Sewee, Santee, Congaree, Wateree, Tutelo, Saponi | 17,500 | 1,561 | 11.20 |
| 12c | South Atlantic Slope, Carolina Sound | | | |
| | Weapemeoc, Secotan, Pamlico | 4,500 | 140 | 32.10 |

TABLE 7—(*Concluded*)

| Culture areas | Tribes | Population | Area in 100 $km.^2$ | Density per 100 $km.^2$ |
|---|---|---|---|---|
| | EAST AND NORTH—(*Continued*) | | | |
| 12d | South Atlantic Slope, Virginia Tidewater | | | |
| | Powhatan | 9,000 | 234 | 38.40 |
| 13 | Appalachian Summit | | | |
| | Cherokee | 22,000 | 1,344 | 16.30 |
| | II. *North* | | | |
| 14 | Northern Great Lakes | | | |
| | Algonkin, Ottawa | 7,300 | 2,043 | 3.57 |
| | Ojibwa (other than in 6d and 7) | 30,000 | 3,145 | 9.54 |
| 15 | Eastern Subarctic | | | |
| | Beothuk | 500 | 1,242 | 0.40 |
| | Montagnais, Naskapi, Tête de Boule | 5,500 | 12,550 | 0.44 |
| | Cree (except Plains Cree in 6d) | 17,000 | 11,885 | 1.43 |
| 16a | Western Subarctic | | | |
| | Chipewyan | 2,250 | 6,194 | 0.36 |
| | Beaver | 1,250 | 524 | 2.38 |
| | Slave | 1,250 | 892 | 1.40 |
| | Dogrib | 1,250 | 1,418 | 0.88 |
| | Abbato-tine, Etchao-tine, Strongbow | 1,200 | 3,254 | 0.37 |
| | Sekani | 3,200 | 3,218 | 0.99 |
| | Kaska | 500 | 500 | 1.00 |
| | Kutchin tribes in Canada (4 plus 4 part) | 3,000 | 2,861 | 1.04 |
| | Kutchin tribes in Alaska (3 plus 4 part) | 1,600 | 2,464 | 0.65 |
| | 4 Khotana tribes, Kalchana | 4,500 | 4,750 | 0.94 |
| | Ahtena | 500 | 621 | 0.81 |
| 16b | Interior Tundra | | | |
| | Hare | 750 | 2,261 | 0.33 |
| | Yellowknife | 430 | 2,110 | 0.20 |
| | Chipewyan territory | | 750 | |
| | Caribou-eater | 1,250 | 3,860 | 0.32 |
| 16c | Upper Fraser | | | |
| | Carrier, Babine | 8,500 | 1,125 | 7.56 |
| 16d | Northern Plateau Apex | | | |
| | Tahltan, Taku-tine | 2,500 | 2,142 | 1.16 |
| | MEXICO AND CENTRAL AMERICA | | | |
| | Culture areas are given in table 11. Populations are not considered by Mooney, except Coahuiltec 15,000 (in U. S. ?) | | | |

## POPULATION AND DENSITY BY AREAS

I give in table 8 the population, size, and population density of each numbered cultural area, such as the Southeast, South Atlantic Slope, Prairies, Great Basin, California, with its lettered subareas merged in it.

## TABLE 8

### Population Densities of Principal Areas of Culture

| | Culture areas | Population | Area in 100 km.$^2$ | Density per 100 km.$^2$ |
|---|---|---|---|---|
| | *Arctic Coast* | | | |
| 1 | Eastern Eskimo | 30,900 | 15,057 | 2.05 |
| 2 | Western Eskimo | 58,800 | 7,231 | 8.13 |
| | *Northwest Coast* | | | |
| 1 | Northern Maritime | 28,100 | 1,666 | 16.80 |
| 2 | Central Maritime | 17,300 | 594 | 29.10 |
| 3 | Gulf of Georgia | 23,700 | 725 | 32.60 |
| 4 | Puget Sound | 6,000 | 357 | 16.80 |
| 5 | Lower Columbia | 32,300 | 507 | 63.70 |
| 6 | Willamette Valley | 3,000 | 334 | 8.98 |
| 7 | Lower Klamath | 18,800 | 377 | 49.80 |
| | *Intermediate and Intermountain* | | | |
| 1 | Great Basin | 26,700 | 10,810 | 2.47 |
| 2 | California | 84,000 | 1,941 | 43.30 |
| 3 | Columbia-Fraser | 47,650 | 6,660 | 7.15 |
| | *Southwest* | | | |
| 1 | Pueblo | 33,800 | 446 | 75.70 |
| 2 | Circum-Pueblo (Athab.) | 14,500 | 6,430 | 2.26 |
| 4 | Sonora (in U. S.) | 10,600 | 864 | 12.20 |
| 7 | Northwestern Arizona | 1,600 | 666 | 2.40 |
| 8 | Lower Colorado River | 13,000 | 416 | 31.25 |
| 9 | Peninsular Calif. (in U. S.) | 3,000 | 166 | 18.10 |
| 10 | Southern California | 26,500 | 683 | 38.70 |
| | *Eastern* | | | |
| 1 | Southeast | 87,800 | 5,983 | 14.70 |
| 2 | South Florida | 4,000 | 542 | 7.38 |
| 3 | South Texas | 6,400 | 2,057 | 3.11 |
| 4 | Red River (and Pawnee) | 25,900 | 4,563 | 5.67 |
| 5 | Plains | 50,500 | 13,978 | 3.61 |
| 6 | Prairies | 53,000 | 11,692 | 4.53 |
| 7 | Wisconsin | 18,300 | 1,461 | 12.52 |
| 8 | Ohio Valley | 20,000 | 7,707 | 2.59 |
| 9 | Southern Great Lakes | 42,500 | 4,421 | 9.61 |
| 10 | North Atlantic Slope | 7,300 | 3,285 | 2.22 |
| 11 | Middle Atlantic Slope | 46,800 | 1,828 | 25.60 |
| 12 | South Atlantic Slope | 41,900 | 2,467 | 17.00 |
| 13 | Appalachian Summit | 22,000 | 1,344 | 16.30 |
| | *Northern* | | | |
| 14 | Northern Great Lakes | 37,300 | 5,188 | 7.18 |
| 15 | Eastern Subarctic (Algonkin) | 23,000 | 25,677 | 1.11 |
| 16 | Western Subarctic (Athab.) | 33,930 | 38,944 | 0.87 |

Condensing still farther, into grand areas, we have the densities shown in table 9. The areas are arranged not geographically but in order of density.

I have added in parentheses the three main subunits of the Intermediate-Intermountain area, because these are so diverse that the density of the whole area is only a statistical mean. For the same reason I have given the Eastern and Northern areas separately, though adding in parentheses their joint mean.

TABLE 9

POPULATION DENSITIES BY MAJOR AREAS

| Culture areas | Population | Area in 100 km.$^2$ | Density in 100 km.$^2$ |
|---|---|---|---|
| (California | 84,000 | 1,941 | 43.30) |
| Northwest Coast | 129,200 | 4,560 | 28.30 |
| Southwest (in U. S.) | 103,000 | 9,671 | 10.70 |
| Intermediate-Intermountain | 158,350 | 19,411 | 8.10 |
| (Columbia-Fraser | 47,650 | 6,660 | 7.15) |
| Eastern | 426,400 | 61,328 | 6.95 |
| Arctic Coast | 89,700 | 22,288 | 4.02 |
| (East and North | 520,630 | 131,137 | 3.97) |
| (Great Basin | 26,700 | 10,810 | 2.47) |
| Northern | 94,230 | 69,809 | 1.35 |
| Total, north of Mexico* | 1,000,880 | 187,067 | 5.35 |

* Coahuiltec in the United States are omitted, Apache and Papago in Mexico included.

The outstanding fact is the exceptional density on the Pacific coast—both Northwest and California. Next comes the Southwest, which extends to the Pacific coast. Even the Columbia-Fraser region, a Pacific Coast hinterland, more than holds its own against the fertile East. The Arctic coast, surprisingly enough, has a density more than half as great as that of the East, though this was mostly agricultural; and one approximately equal—on the face of the figures even slightly superior—to the agricultural Eastern and nonagricultural Northern areas combined. This means, of course, that the latter had much the lowest density of all. The figure for the continent, north of Mexico, falls somewhat below that for the agricultural East and somewhat above that for the Eskimo.

## COAST LAND AND FARM LAND

Two generalizations are obvious: coastal residence did make for heavier population; agriculture did not by itself necessarily increase density. Before these propositions are analyzed more in detail with regard to their meaning, it seems worth while to express them in still more drastic figures.

We can first set off the wholly nonagricultural Pacific coast; next, the essentially agricultural areas of the Southwest and East; and then treat the remainder of the continent north of Mexico as a unit.

The Pacific coast may be conveniently taken as extending from the Malemiut Eskimo of Alaska to the Diegueño and Kamia just short of the mouth of the

Colorado. The area is that of Pacific coast in the ordinary sense, not Pacific drainage. The entire Yukon, Fraser, and Columbia River areas are excluded, except for the Eskimo, Coast Salish, and Chinook at the mouths of these streams. California is included as defined as a native culture area, not as a modern political unit; so are the northwestern margins of the Southwest, namely, southern California and the United States fragment of the Peninsular California area.

The agricultural region comprises the tribes in whose economy farming plays a significant rather than sporadic part. Excluded are the Walapai, Havasupai, Yavapai, Apache, Navaho,[14] Ojibwa, Abnaki, and those of southern Texas and southern Florida. Included are Southwest areas 1, 8, and the Pima Alto and Papago of 4; and Eastern areas 1a–c, 4ab, 6 a–c, 7, 8ab, 9, 11, 12a–d, 13.

This classification yields the results shown in table 10.

TABLE 10

GRAND POPULATION DIVISIONS

(Papago, Apache, River Yumans in Mexico included; Coahuiltec in United States excluded)

| Divisions | Population | Area 100 km.$^2$ | Density | Percentage of total population |
|---|---|---|---|---|
| Pacific coast, Bering Strait to the mouth of the Colorado | 295,700 | 11,745 | 25.2 | 29.6 |
| Essentially agricultural areas, East and Southwest | 404,600 | 39,884 | 10.1 | 40.4 |
| Remainder, north of Mexico | 300,580 | 135,438 | 2.2 | 30.0 |
| | 1,000,880 | 187,067 | 5.1 | 100.0 |

In round numbers, the Pacific coast had three hundred thousand inhabitants out of a million north of Mexico, or 30 per cent of the population in 6 per cent of the area, with a density of twenty-five per hundred-square-kilometer unit; the farming regions, 40 per cent in 20 per cent of the territory, with a density of ten; the remainder, 30 per cent on nearly 75 per cent of the land, with a density barely exceeding two.

If the tribal figures on which this summary is based seem loaded, it is only necessary to remind the critic that if Mooney's original Merriam figures for California had been used instead of the Kroeber ones, the share of the Pacific coast would have been 40 instead of 30 per cent of the total, without increase of area.

---

[14] The Navaho and part of the Apache should perhaps not have been excluded from the farming peoples. The former farmed not only sporadically but also for their main subsistence, according to what Gladys Reichard and W. W. Hill tell me. For the Western Apache we have G. Goodwin's data in AA 37:55–64, 1935.

The inclusion of the Navaho and *all* the Apache among the farming tribes would, however, add only some 14,000 to the 404,000 population computed in the text. Also, their areal density being low (2.26), their addition would somewhat decrease the density for farmers as a whole from the figure of 10.1, and further emphasize the heavier density (25.2) of the Pacific Coast nonfarmers.

That among nonfarming natives a coast or coast-plain habitat was normally far more favorable than interior residence in conducing to an aggregation of population, is indicated not only by the much greater density in the Pacific areas, but also by two other facts: first, that the Arctic shore Eskimo are, by area, more numerous than their inland Athabascan and Algonkin neighbors; and second, certain density figures for adjacent Atlantic and Gulf tribal areas. Thus:

| *Coast* | | *Interior* | |
|---|---|---|---|
| Massachuset | 105 | Nipmuc | 14 |
| Pequot | 76 | Mahican | 11 |
| Montauk | 158 | Iroquois | 7 |
| Powhatan | 38 | Monacan, etc. | 9 |
| Weapemeoc, etc. | 32 | Eastern Siouan | 12 |
| Coree | 33 | | |
| Stono, Cusabo, etc. | 39 | Yuchi | 12 |
| Apalachicola, etc. | 20 | Creek | 12 |
| Chitimacha | 32 | Natchez | 19 |
| | | Chickasaw | 9 |
| | | Quapaw | 4 |

The only really low densities for coast tribes in this region are in southern Florida and southern Texas, which are nonagricultural districts.

A sharp line of division between coast and interior cannot easily be drawn in this Eastern region, because tidewater in many places runs far inland and because tribal adhesions and territories are so often uncertain. I therefore do not venture on any statistical expression. But an inspection of the itemized tribal entries in table 7 will, I think, leave little doubt that on the whole the population density in the farming parts of the Atlantic and Gulf region was perhaps twice heavier on the coast, including habitats on tidewater or within a day's travel of salt water, than immediately inland thereof.[15]

This means that for the continent as a whole, always unfortunately excluding Mexico, coastal residence, inclusive of that on coastal plains or along the lowest courses of rivers, led to a populational density from five to ten times greater than in the interior as a whole, in nonagricultural regions; and probably at least twice as great even in agricultural areas.

This finding may be expectable; but that the nonfarming Pacific coast should overtop the farming areas with a two-and-a-half times greater density is certainly surprising, at least when modern agriculture is borne in mind. It means, obviously, that the relation to the land in terms of agricultural utilization by the United States Indian was fundamentally different from our own. He was not a farmer in our sense of the word. Not only did he derive perhaps half his subsistence through nonfarming; he utilized for his farming no more than a vanishingly small percentage of the land capable of being farmed.

---

[15] Swanton in AA 37:373–385, 1935, holds that in much of the Southeast agriculture was producing a drift of population from the coast to the interior even before white pressure began.

This is particularly true of the East; and the Southwest should be specifically excepted in this connection. The agricultural total in table 10 breaks up thus: East, 347,200 souls, 3,799,762 square kilometers, 9.1 density per 100 square kilometers;[16] Southwest, 57,400, 172,200, 33.3. Not only is the gross density nearly four times as great in the Southwest, but the larger part of the territory assigned on the map to the Southwestern agricultural tribes is desert or mountain and unfarmable, or actually unfarmed by ourselves. The native Southwesterners, so far as they farmed, therefore pushed the exploitation of the land to a much higher pitch than the Easterners. This fact implies a different history, and thus further justifies the current sharp segregation of the Southwestern and Eastern culture areas. These essentially different histories, in turn, reënforced by the nonagricultural geographic gap between the areas, indicate separate origins, or at any rate separate branchings from the same southern stem of maize culture.

## The Agricultural East

The basic situation in regard to native farming in the Eastern area may be made clearer by a comparison with our agriculture. The average yield of maize per acre today throughout the United States is between 25 and 30 bushels of 56 pounds of shelled corn. Maize notoriously increases its yield per acre but little under improved methods of farming. The improvements which we have made over Indian methods have been mainly in the direction of reducing production costs, especially in labor. The Indian therefore may be assumed to have derived nearly as many bushels from each acre of planting as we. He probably planted somewhat farther apart; but not unduly so, because of the difficulty of clearing and cultivating unnecessary area with his tools. A yield of 15 to 20 bushels therefore seems a fair estimate. This is 840 to 1120 pounds, say 1000, or a little less than 3 pounds per day. This should more than sustain the average person in a community composed of men, women, and children. Beans and pumpkins would vary the diet as partial substitutes for maize without seriously affecting the acreage cultivated. The quantity of farm food consumed was probably less than here computed, because of the supplement of game, fish, mollusks, berries, wild seeds, and roots, which over much of the Eastern region is estimated to have contributed half the food supply.[17] However, let us keep to our figure of nearly 3 pounds of maize or equivalent in farm products per head. Since this involves only about one acre cultivated per person, and we reckon 347,200 population in the Eastern agricultural area, the total native plantations in this region aggregated in round numbers only a third of a million acres. Against this, we today plant a hundred million acres of maize alone in the United States—not all, but nearly all, within the native agricultural areas here called Eastern. We add another two hundred million acres in wheat, oats, cotton, and hay—many of these acres fairly suitable, though not profitable to us, for maize. True, part of our total lies outside the region of systematic Indian farming; but it is a minority part. It does not much matter whether our total is one or two or three hundred million acres and the Indian total one-third or two-thirds of a million: the conclusion remains that the eastern Indian cultivated less than 1 per cent of the area on which theoretically he could successfully have grown crops satisfactory to his needs and standards. My own opinion is that the figure was under rather than over one-half of 1 per cent.

---

[16] Spinden (cited below) computes, also from Mooney, 348,700 inhabitants in about 1,375,000 square miles, which comes to 3,561,000 square kilometers and a density of about 9.8. He appears to include the Navaho and southern Ojibwa as farmers.

[17] The heavier population density in the Wisconsin wild-rice district as compared with adjacent areas suggests the influence, in a farming area, which even a single wild food plant might have if systematically gatherable. See the discussion of this area in Section IX.

Here is another way of conceptualizing the situation. The Eastern agricultural density was 9.1 per 100 sq. km., a little under 9 souls—say 2 families—per township. We allot 144 quarter-sections to 144 families, or some 700 persons, in a township; and these earn through their crops not only their food but also their clothing, tools, vehicles, furniture, taxes, and luxuries. The ratio comes out about the same.

It is clear that two things were fundamentally different in the Eastern Indian economics and ours: the land use, or relation to the land; and the place of agriculture in life. "Improvement" of land was confined to minute specks in the landscape. They were comparable in size to oases, although not in the least enforced by nature, being in fact simply selected by convenience or habit from among a hundred times as many sites almost equally well utilizable. In other words, there was a hundredfold surplus of potentially farmable land over farming population.

(My colleague Sauer points out that this analysis omits one important factor: because of his operating only with sticks and light hoes, the Indian avoided any but friable soil. I should have given this consideration more weight. For instance, breaking sod would have been very difficult with the native hand tools. Nevertheless there must have remained a great excess of land which under augmenting population pressure could have been farmed without draft animals or iron. No doubt this would have required some additional labor effort, but in some places less effort than plowing: in fire-cleared forest, for instance, where planting could be done between the unremoved stumps, as in the tropics. That in general the Eastern Indians did not have recourse to such devices suggests that their population remained so low from other causes that they could raise what they needed on the easiest and most fertile spots.)

Second, while every native household in the area farmed, it becomes doubtful whether many of them did so from real necessity. If the Pacific coast from Bering Strait to the Imperial Valley desert could support 25 souls per areal unit without farming, it is not unreasonable to suppose that the uniformly fertile East could have supported 10 without farming. Agriculture, then, was not basic to life in the East; it was an auxiliary, in a sense a luxury. It made possible increased accumulation of food against the future, living in permanent sites and in larger groups, and therefore joint undertakings, whether of council, ritual, war, or building. It thus no doubt contributed somewhat toward the enrichment of cultural life; but there is little to argue that the culture was leaning very fundamentally on agriculture.

Does this mean that agriculture was a recent introduction in the East, not yet fully acculturated and its potentialities still mainly unconceived? Theoretically this might well be so; but it is not a necessary inference. As long as any other factors kept an originally light population light, the relation to the land, the part-only farm use of this, might go on indefinitely. The answer to the question of the age of Eastern agriculture should not be given deductively. The direct evidence to be considered is archaeological; the indirect, social factors bearing on population.

As for archaeology, we are still handicapped by our disgraceful because probably unnecessary inability to interpret Eastern prehistoric data in sequential terms. Still, the gross fact remains that the Ohio and middle Mississippi valleys were found occupied, at the outset of the historic record, by an exceedingly thin and scattered population, but full of thousands of mounds and other structures which probably required a more concentrated population to erect. Allowing for all possible shifting about of this earlier farming population, and an abnormal readiness to leave one site as soon as its structures were completed in order to begin over again elsewhere, a minimum of several centuries must nevertheless be allowed as the duration of the building; and to all major intents, this period was both past and forgotten when the first whites entered. Since the mound culture was agricultural, it is accordingly hard to see how fewer than 500 years, perhaps 1000 or more, could have elapsed between the introduction of maize and the coming of Caucasians into the East. If agriculture in itself tended automatically to produce a marked increase of population density, it was long enough in the land to have achieved this effect to a much greater degree than obtained at discovery. Rather, we see a positive thinning out of numbers, in at least part of the area. The indicated cause, then, is not mere shortness of duration of establishment of the agriculture, but "social" factors of some sort.

Of social factors, the most direct may be considered to have been warlike habits. Reference is not to systematic, decisive war leading to occasional great destructions but also to conquest, settlement, and periods of consolidation and prosperity. Of all this the Eastern tribes knew nothing. They waged war not for any ulterior or permanent fruits, but for victory; and its conduct and shaping were motivated, when not by revenge, principally by individual desire for personal status within one's society. It was warfare that was insane, unending, continuously attritional, from our point of view; and yet it was so integrated into the whole fabric of Eastern culture, so dominantly emphasized within it, that escape from it was well-nigh impossible. Continuance in the system became self-preservatory. The group that tried to shift its values from war to peace was almost certainly doomed to early extinction. This warfare, with its attendant unsettlement, confusion, destruction, and famines, was probably the most potent reason why population remained low in the East. It kept agriculture in the rôle of a contributor to subsistence instead of the basis of subsistence. On the other hand, such farming as was practiced yielded enough of added leisure, concentration, and stability to make pretty continuous warfare possible. A population of pure hunter-gatherers would probably, except on the immediate coast, have been too scattered in minute bands, too unsettled in a country of rather evenly distributed food possibilities, too occupied with mere subsistence, to have engaged in war very persistently. Just this seems to have happened among Montagnais, Cree, and Ojibwa, for instance, as compared with Muskogians, Iroquoians, and Siouans. The latter were caught in a vicious circle, which at the same time gave them a stable adjustment. Agriculture made their wars possible; but their warfare kept the population down to a point where more agriculture was not needed.

Behind all this must lie another, though negative, factor: the absence of all effective political organization, of the idea of the state. Effective, of course, means effective from our point of view; it is not denied that the native organization was effective so far as concerned its needs within the cultural system in which it found itself. Had controlling authority, in the form of a ruler, or of a cohesive, smoothly self-perpetuating group, ever developed in the East, war objectives other than revenge or personal status might also have developed: conquest, pacification, tribute, economic accumulations, further exploitation. From among many such beginnings, no matter how humble in scope, there could sooner or later have emerged, through mutual eliminations, larger units, and from these, true states, stable, internally peaceful, capable of producing wealth, growing in population, and thereby increasingly productive and profitable. Just as something of this sort happened in China and Egypt, it happened in Mexico and Peru; but it did not happen in any consequential degree in what is now the United States. The political systems of the Iroquois, Creek, Cherokee, Natchez either grew up mainly in historic times under Caucasian influence and pressure, or were, as appears possible, fragmentary remnants from the Mound Builder days of heavier population and quasi states. If there were such days, and it seems there were, it may well have been the introduction of agriculture that made their state system possible. But once the system crumbled, perhaps because of being a foreign import and not deeply enough rooted in the culture of the region, there would be a relapse to interminable, economically vain fighting, rendered, however, more persistent and wasteful than ever by the fact that agriculture gave an added margin allowing greater wastage. In the North, where farming could not be or was not introduced, the limitation of purely natural food sources was perhaps the main factor imposing an upper limit to the human population. In the East, where the combination of agriculture and fertility made possible the comfortable subsistence by native techniques of a population many times greater, the causes must have been cultural; and of these the outstanding ones were the paired ones of high social premium on war for its own sake and the absence of value for political organization of more than a rudimentary kind.

Incidentally, the cultural dependence of the Plains on the East, historically, is again indicated by the fact that the whole sociopolitical system and motivation of the Plains are, at large, a copy of those of the East. The acquisition of the horse gave the Plains tribes, while the buffalo lasted, a food margin and a leisure parallel to the agriculture of the East, and enabled them to duplicate the customs of the East with only minor modifications such as the replacement of torture by coup counting.

We must, then, think of the East as agricultural indeed, but as inhabited by agricultural hunters, not by farmers, peasants, or peons. There were no economic classes, no peasantry to exploit nor rulers to profit from a peasantry. Every man, or his wife, grew food for his household. The population remaining stationary, excess planting was not practiced, nor would it have led to anything in the way of economic or social benefit nor of increase of numbers. Ninety-nine per cent or more of what might have been developed remained virgin, and was tolerated, or appreciated, as hunting ground, as waste intervening to the nearest enemy, or merely as something natural and inevitable. There was nothing to prevent a clan, town, or tribe from shifting its houses and fields to any one of dozens of near-by equally satisfactory sites in its acknowledged territory; or, if strong enough, to several hundred in land of its neighbors (subject to the qualification mentioned in the parenthesis on p. 147, above). There was as a rule nothing much gained or lost, other than for immediate considerations, by such shifts; and they were freely made—not perhaps mainly from sheer restlessness, but at least for trivial reasons. The consequence is the strange contrast of a relatively unstable, mobile agricultural population in the East and a rather highly sessile nonagricultural one on the Pacific coast. This point will be reverted to in a following section dealing with the relation between language groups and population.

## COMPARISON WITH MEXICO

A comparison with Mexico seems worth while. There, conditions were different. It is known that population was denser, and that social classification and political organization were much more developed. However, there are only fragmentary general or gross estimates of the ancient Mexican population, and these vary.[18] We may therefore attempt to proceed by working backward from present conditions. The area of modern Mexico is roughly 750,000 square miles, or about 480,000,000 acres, of which a fourth, or 120,000,000, are considered (or are nominally) cultivable, and 30,000,000 are actually cultivated, although for only about half of these 30,000,000 is a crop specified, so that the other half may be considered as in a condition of latent cultivation or given over to products like maguey or henequen. The largest area is in maize, 7.5 million acres in 1926. Next come beans with 2.2, wheat 1.2, cotton 0.6. The total is astonishingly small compared with the United States, whose maize acreage alone is more than three times as large as Mexico's total acreage in all crops. There is nothing to show that any considerable areas now unused were planted at the time of discovery. Rather have the hacienda system and modern engineering tended to add acreage. If we assume, as before, that an acre will support a person, the present total in maize and beans, if utilized to the limit, would have provided sustenance for 10,000,000 souls. The addition of other acreage now actively in crops would bring this up around 15,000,000, or the present population. This is probably too high for the past. It would mean that the country at the time of discovery was settled up to the very limit of the population which it would support with the agricultural techniques at its command. Of this there is no indication. I would prefer to reduce the figure by three-fourths or more. Yet even this means that a fourth or a fifth of the most available farm lands, perhaps the majority of the best, was being worked. About the larger centers of population, as in the Valley of Mexico, there was probably little waste except of distinctly inferior tracts. The native historical records show that, in the Valley, farm land was at a premium, and either in the form of tribute in produce or by direct appropriation was a prize of conquest. There existed here, then, a condition resembling that of modern civilized countries; and even in the less densely settled areas of central and southern Mexico, one approximating this. That the land was owned by towns or barrios or family aggregations instead of individually is socially and juridically important, but does not affect the population and subsistence picture. Where the Eastern Indian farmed a fraction of 1 per cent of his available land, the Mexican farmed a considerable fraction of his total,[19] and in congested, politically dominant, and affluent areas, practically all of it. It was almost inevitable, therefore, that in Mexico there should be economic classes, political organization, large communal works, and war for profit. There were in Mexico the equivalents of peasantry and aristocracy. Without such classes, the population could hardly have accumulated as it did; and at the same time, its growth must have tended to make organization desirable if not necessary. However free in principle, the average Mexican of 1500 A.D. was no longer free as a Creek or Iroquois or Illinois was free. He could not farm if and where he pleased. He was bound by economic necessities of subsistence as well as by his state and rulers. The Spaniards perhaps found more peons in Mexico than they made.

---

[18] They are considered below, in the subsection on Mexico.

## THE SOUTHWEST

The Southwest was different from both Mexico and the East. It had maize as far back as Basket Maker times—less long than Mexico, no doubt, but longer than the East, where, though agriculture was evidently more than two or three centuries old, there is nothing to show that its importation goes back to the pre-Christian era. Population density in the Southwest also was intermediate, so far as genuinely agricultural peoples were concerned. The distinctive feature of the Southwest is the presence in it, side by side, of two kinds of population: the fairly densely settled farmers, and the very thinly sown nonfarmers around and between them. How far back this condition goes historically it is difficult to say, because, as might be expected, the farmers have left abundant and striking archaeological remains, the gatherers few and scattered ones. The farming population of Pueblo type is known to have been more widespread in Pueblo 2 time—say in the general period, 900–1100 A.D. But there may have been nonfarmers near them, if not in immediate contact, even then. We cannot say positively; but most of the Northwest Arizona area is devoid of Pueblo ruins or remains.

---

[19] The reference is to the areas recognized as culturally Mexican in the present monograph, not to the modern Republic of Mexico, the northern half of which was much more thinly populated and in large part nonagricultural.

The basis of this duality of the Pueblo-Southwestern economic system, whether it is relatively recent or ancient also, lies obviously in the nature of the land. The Southwest is an arid region, steppe and mountain or semidesert where not desert. Farming, with patience, can be made to yield a fairly reliable subsistence, but only in selected spots. The greater part of the surface of the Southwest was as useless to the Pueblos, for crops, as it is to us. They could and did farm many spots which we do not farm; but that was because they sought only their food, we a civilized living. Allowing, as before, an acre to a person, the 34,000 Pueblos whom Hodge and Mooney estimate for 1680 would have had under cultivation a total of only some 53 square miles—a township and a half. We may double the allowance of land per head to permit of wider spacing of planting or lower yield in the arid Southwest. We may enlarge the population somewhat to accord with the wider extent of the culture in Pueblo periods 2 and 3.[20] Even this, however, brings the actually farmed land up to a total of only 100 or 200 square miles in 200,000 or 300,000. This is just about the ratio utilized in the East; but there most of the great unused remainder was farmable, whereas in the Southwest it was not.

The Pueblo, then, resembled the Mexican in using for his crops, if not every inch of productive land, at any rate much of the best of it. This makes his subsistence appear more directly of Mexican origin, with but slight transmutations. Where he differed was in that so little of his land was cultivable, and that scattered. He could not become numerous. He therefore did not need states and rulers and a peasantry; the more so as the scattered distribution of his farmable land kept his communities small. But, once given a concentration in towns, his agriculture became a necessity to him if he was not to starve. This in turn engendered an attitude, a lack of leisure and lack of sense of freedom and enterprise, which would keep him from plunging into chronic warfare as a social mechanism. His population was kept down not so much by being killed off or expelled and disrupted, as by clinging to a narrow shelf of subsistence mechanism without leeway or recourse.

So far, discussion of the Southwest has been in terms of Pueblos and the nonagricultural tribes enclosing them. Populationally, this part of the Southwest forms the smaller half of the Southwest within the United States: 48,300 souls out of 103,000. Pima-Papago, Lower Colorado Yumans, and Southern Californians alone, with 10,000, 13,000, and 26,500 souls, outnumber the combined Pueblo, Apache, and Navaho, even with the Pueblo counted at Mooney's high figure of nearly 34,000. Numerically, the preponderant half of the American Southwest was the Gila-Yuma-California sphere, not the Pueblo one. In density the disproportion is even greater: nearly 20 for the former, against a little more than 7 for the Pueblo.[21] It is true that the density of the pure Pueblo territory alone was the highest—around 75. But against this in the other half are figures like 31 for Lower Colorado and 39 for nonagricultural and semidesert Southern California. The Pueblo sphere density as a whole is brought down by the abnormally low density of the vast area occupied by Athabascans: 2.3. This expresses again the oasislike distribution of the important population of the Pueblo sphere, and the contrast between town dwellers and mescal gatherers, which recalls so nicely in many ways the relation of the town farmers and the herders in the Sahara, Arabia, and inner Asia. As against this, the Gila-Yuma-California sphere was much more evenly sown with population, irrespective of whether this was agricultural or not. In one sense, therefore, this area may be considered as having made a healthier adjustment with its arid environment than the Pueblo sphere.

---

[20] However, Kidder cuts Mooney's 33,800 to 20,000 population.

[21] The figures are: 54,700 in 279,500 square kilometers = 19.6; 48,300 in 687,600 = 7.2.

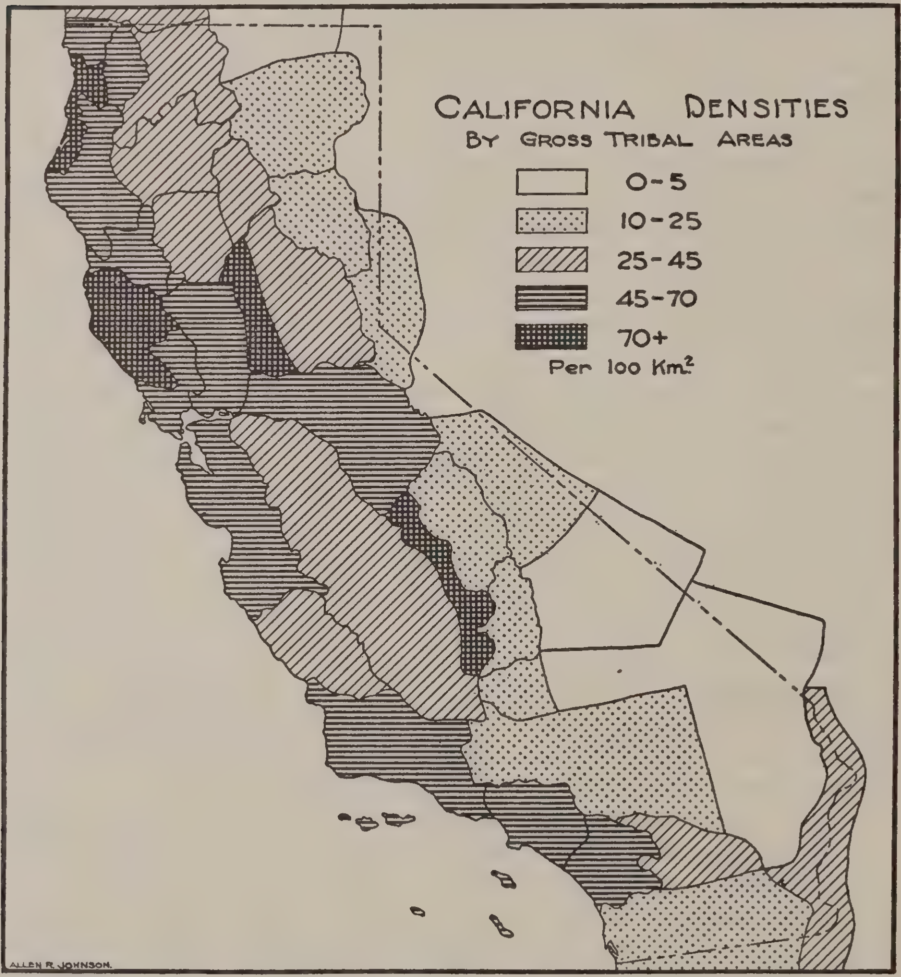
The archaeological evidence indicates that in the past, in Pueblo periods 1 and 2, say until about eight hundred years ago, the Pueblo proper population was much more widely and scatteringly distributed in numerous small settlements. In other words, its distribution then approximated that of the Gila-California area. This distribution began to be abandoned with the concentration into larger towns in Pueblo period 3. This concentration may have been in part due to the pressure of preying Athabascans first intruding then. But whatever the causes—invasion, drought, inner cultural tendency, or a combination of these factors,—once the concentration had begun, it left ever larger areas open to the "nomads," that is, thinly sown mescal gatherers, and enabled them to establish themselves and their subsistence adaptation more firmly. The very flowering of Pueblo culture therefore tended to shrink its area, to embody it geographically in a culture of very much lower intensivity, and to put it on the defensive against this. Nothing like this occurred in the western Southwest, where farmers and nonfarmers remained in adjustment, and the whole of any given tract continued to be exploited more or less to the limit by whatever subsistence mechanism was most feasible, without notable "class" differentiation of its culture. The one exception was the Casa Grande type of concentration in the Gila Valley, when Puebloid polychrome pottery culture impinged on native red-on-buff; but this was evanescent, and, on its collapse, culture returned to its former adjustments.

So far, we have been speaking, of necessity, in terms of the American Southwest. If the Mexican part, for which we have no population data, could be included, the area and population of the Southwest would be increased by nearly half, and its Pueblo-type part would presumably shrink in numbers from a minor half to no more than a third; which goes to show again what different historic concepts "Pueblo" and "Southwestern" are, and the need of their not being used interchangeably.

## CALIFORNIA

For California, with which my personal acquaintance is greatest, I add a special map (no. 19), which includes not only the California area proper, but also those parts of the Northwest, Basin, and Southwest areas which lie within the modern state. It will be seen that in general the population diminishes from coast to interior, rapidly dropping still further with the crossing of the interior ranges. The lower courses of large streams go with the coast. The one exception to the general trend is on the Sierra Nevada flank of the San Joaquin Valley. Here the aridity of the valley—Russell reckons it as desert climate,[22] and it is waterless most of the year, except for the larger streams that transect it—made for a heavier population in the better-watered foothills belonging to the Yokuts and perhaps the Miwok.

Further, the population in general, and with this one exception of the foothill Yokuts, is conspicuously densest in the regions of cultural climax: the lower Klamath, the lower Sacramento and Russian, the Santa Barbara Channel, the lower Colorado. In this connection these climaxes may of course not be compared among themselves, which would involve other considerations; but each does stand out as more heavily populated than the regions surrounding it. This fact would probably have been much more accentuated if the map could have been constructed in terms of actual habitation sites, for which the



Map 19. Population Densities in Native California, by Gross Areas of Ethnic Groups.

---

[22] Climates of California, UC-PG 2:73–84, 1926. Compare map 24.

data are unfortunately still too partial, instead of gross tribal or ethnic territories.

Finally, the two heavier shadings on the map (45–70 and 70+) may be taken as indicating a density approximately equal to that of the Pueblo area proper (76). The fact that they cover so considerable a portion of the state shows once more that under native conditions even intensive agriculture did not necessarily lead to higher density than a favorable nonagricultural adaptation.

This map of California is almost the reverse of that in the Handbook of California Indians, page 887, giving the percentage of survival since Caucasian arrival. Where the Indian was numerous, the white man penetrated early and settled in numbers, so that in general it has been the densest native populations which have suffered the heaviest decline.

Apart from climax considerations, these two maps together probably picture coast-inland population relations and maintenance much as they existed also on the Atlantic side of the continent, though probably to a somewhat less extreme degree there. Through their position, the Iroquois, Cherokee, and Creek, on this view, preserved or increased their population in the Colonial period much as the Achomawi and Mono maintained theirs relatively well in California.

## THE NORTHWEST COAST

The figures for the areas within the Northwest coast also carry a story, though they must be used with a certain reserve because in some of the areas the land itself was so little or secondarily used that length of frontage on shore or river was evidently the decisive factor in regard to population.[23] Still, the areal densities mean something. They are:

| *Areas* | |
|---|---|
| Lower Columbia (Chinook, etc.) | 64 |
| Lower Klamath (Yurok, etc.) | 50 |
| Gulf of Georgia (Coast Salish) | 33 |
| Central Maritime (Wakashan, etc.) | 29 |
| Northern Maritime (Northern tribes) | 17 |
| Puget Sound (Coast Salish) | 17 |
| Willamette Valley (inland) | 9 |
| *Subareas* | |
| Central Maritime, South (Nutka, Makah, Quinault) | 65 |
| Northern Maritime, Archipelago (Haida, Southern Tlingit, Tsimshian) | 22 |
| Central Maritime, North (Kwakiutl, Heiltsuk, Bella Coola) | 17 |
| Northern Maritime, River (Niska, Gitskyan, Haisla) | 10 |
| Northern Maritime, Mainland (Northern Tlingit) | 10 |

The Willamette area is a wholly inland one. We do not know with certainty whether it should be reckoned as part of the Northwest coast or the Columbia-Fraser plateau. The Puget Sound area, although a salt-water one, also extends its inlets far into the interior, and is quasi inland. Apart from these two minor areas, the other five range almost in geographical order, with density decreasing from south to north. The subareas within the two northern areas again show almost the same arrangement. Even if Mooney's computations for the Chinook and Gulf of Georgia Salish are taken as somewhat high, the generally greater density of the south as against the north remains fundamentally unimpaired. On this point, too, shore-line density would not invert the situation, the northerly areas having the more irregular, indented shore, the ratio of which to the already lighter population would go up faster even than their land areas. The difference seems to lie in this: The northern groups were essentially maritime, mostly lived fronting the beach, and made little use of the land which they owned. The southern groups lived on river and tributary as well as on the shore, perhaps more largely so, in fact,[24] and often made genuine use of their land holdings. Their habitat utilization and culture remained more generalized and simpler; those of the northern groups were more specialized and extreme. As in the Southwest, on comparison of Gila-California with Pueblo sphere, the more generalized method in the long run permitted of a heavier aggregate population.

---

[23] Coast-line holdings and densities are considered in a separate subsection below.

This set of facts also seems to reënforce the previously outlined interpretation of Northwest Coast culture development. If the generalized southern areas represent, as seems reasonable, the survival of an earlier phase, it is the northern areas which have specialized away from this, and their type of culture must on the whole be the more recent. Whether this specialization was mainly the result of an internal development leading to a shift from river to inlet to ocean shore where the shore was most favorable, or was brought about by Eskimo or Asiatic or transoceanic contacts and influences, is another and difficult problem, but one which may prove soluble to investigators in a position to analyze intimately the entirety of Northwest Coast culture; though they also can hardly come to a final conclusion without taking into detailed consideration the geographic setting. For the present we can content ourselves with the findings that it is the southern half of this major area which is the more densely populated, more generalized in its subsistence adaptations, and more ancient in its type of culture; and that the full habitat and subsistence adjustments of the northern half, and the intensity of its development in art, ritual, and property distribution, are relatively recent.

## ESKIMO

For the Eskimo areas, the range of land-area densities is:

| | |
|---|---|
| Aleut | 65.0 |
| Pacific Coast (excluding Bering Sea) | 19.0 |
| Western (Bristol Bay to the Mackenzie River) | 4.9 |
| Central-Eastern | 2.3 |
| Caribou | 0.4 |
| Total Western | 8.1 |
| Total Eastern | 2.1 |

---

[24] In Handbook of California Indians, 117, I have computed a population per shore mile of salt water of 10 and 15 for Wiyot and Yurok, and of 20, 35, 25, and 30 per mile of navigable river for the same two groups and the Karok and Hupa; or a mean of 28 versus 12 in favor of river. All the groups are in northwestern California.

Land areas mean particularly little in comparison with shore line to the Eskimo, whose life depends on water and ice far more than on what the land bears. Still, the figures probably give a crude approximation to shore-mile density, even if the Aleut population of 16,000 should prove too high. How far the higher latitude of the three low-density areas may be a factor must also be considered.

Still, the figures on their face show this: Nearly a third of all the Eskimo lived on open Pacific Ocean frontage—27,300 Aleut, Kaniagmiut, Chugachigmiut, and Ugalakmiut, out of 89,700. From the Malemiut south, that is, roughly, in Alaska from Bering Strait south, were almost 60 per cent of all members of the stock—53,000 out of 89,700. This is the region of masks and wooden houses and grave monuments and property-distribution festivals and war-fleet expeditions, traits which we are wont to regard as characteristic of the Northwest Coast culture. It is also the region where ice hunting of seals, the sledge and the snow house, and many other typical "Eskimo" traits, are lacking or nearly absent.

In other words, "pure" or characteristic Eskimo culture obtains only among two-fifths of the members of the stock. Three-fifths live in a culture heavily charged with elements usually regarded as Northwest Coast or Asiatic and lacking much of the inventory of "typical" Eskimo life. It is obvious that our concept of what is Eskimo is due to a first approach from Greenland, and next Labrador, Baffinland, and the Central region. Had our knowledge begun in Alaska, where population centers and where the density is overwhelming, our most "typical" Eskimo would probably seem merely peripherally reduced and atypical. Just what this means for the origin and history of the culture it is hard to say. Most such evidence can be read two ways. The final word must be by specialists on the Eskimo. But the population distribution cannot be left out of account. And for a full understanding of this, reasonably reliable figures of shore miles held by each Eskimo group are necessary.

## Mexico and Central America

For Mexico and Central America there exists nothing like Mooney's complete group-by-group series of population figures. The contemporary and documentary data seem never to have been gone over systematically, let alone assembled. The estimates which I give here therefore represent nothing more than my personal opinion as based on impressions, somewhat molded by comparisons with the population size and density north of the Rio Grande.

It is necessary first to set off the northwest Mexican districts which I reckon as of the Southwest. The rest, constituting my Mexican-Central American group of areas, I divide for present purposes into three parts: the region of higher culture, comprising the Mesa Central and adjacent parts of Mexico, together with Guatemala and Salvador; the region of lower culture to the southeast, about corresponding with Honduras and Nicaragua; and the mainly nonagricultural area of low culture to the northeast of the Mesa Central. My areal measurements and population estimates run as shown in table 11.

TABLE 11

MEXICO-CENTRAL AMERICA: AREAS, POPULATION, DENSITIES

| | Areas | 100 km.$^2$ | 100 km.$^2$ | Est. pop. | Density |
|---|---|---|---|---|---|
| | SOUTHWEST AREAS | | | | |
| 3 | Fuerte-Yaqui Lowland (Cáhita) | 481 | | | |
| 4 | Sonora, total area | 1,711 | | | |
| 5 | Northern Sierra Madre (Tarahumar) | 715 | | | |
| 6 | Sonora Coast (Seri) | 306 | | | |
| 9 | Peninsular California | 1,390 | | | |
| | *Total* | 4,603 | | | |
| | Less part of 4 counted with U. S. for pop.....864 | | | | |
| | Less part of 9 counted with U. S. for pop.....166 | 1,030 | | | |
| | *Net total in Mexico* | | 3,573 | 100,000 | 27.98 = 28 |
| | MEXICAN-CENTRAL AMERICAN AREAS | | | | |
| | NICARAGUA AND HONDURAS | | | | |
| 1 | Atlantic Nicaragua-Honduras | 2,048 | | | |
| 2 | Pacific Nicaragua | 429 | | | |
| | *Total* | | 2,477 | 100,000 | 40.4 = 40 |
| | REGION OF HIGHER CULTURE | | | | |
| 3 | Salvador | 307 | | | |
| 4 | Upland Guatemala (Highland Maya) | 792 | | | |
| 5 | Yucatán Peninsula (Lowland Maya) | 2,553 | | | |
| 6 | Oaxaca-Tehuantepec | 1,021 | | | |
| 7 | Guerrero | 1,370 | | | |
| 8 | Vera Cruz | 1,028 | | | |
| 9 | Southeastern Central Mesa | 398 | | | |
| 10 | Michoacán (Tarasco) | 570 | | | |
| 11 | Jalisco Highland | 330 | | | |
| 12 | Jalisco Coast | 352 | | | |
| 13 | Northeastern Central Mesa (Otomí) | 673 | | | |
| 14 | South Sinaloa | 404 | | | |
| 15 | Sierra del Nayarit | 460 | | | |
| | *Total* | | 10,258 | 3,000,000 | 292.4 =300 |
| | MAINLY NONAGRICULTURAL REGION | | | | |
| 16 | Central Sierra Madre | 1,095 | | | |
| 17 | North Mexican Interior Plateau | 3,518 | | | |
| 18 | Tamaulipas (incl. Coahuiltec in U. S.) | 2,054 | | | |
| | *Total* | | 6,667 | 100,000 | 15. = 15 |
| | *Grand total* | | 22,975 | 3,300,000 | |

The areal total of 2,297,500 square kilometers includes the part of Coahuiltec territory lying within the United States. This may be estimated at about two-fifths of the total of 149,900 km.², or 60,000 km.², reducing the total to 2,237,500 km.² On the other hand, Apache territory along the northern frontier of Mexico amounting to perhaps 100,000 km.² has been measured in with the United States Southwest areas. On addition of this, we have about 2,337,500 km.² as the area computed by planimeter measurement for Mexico, Guatemala, Salvador, Honduras, and Nicaragua combined, as against a trifle more than 918,000 m.² or about 2,378,000 km.² usually given for the five countries.

We may now examine the estimates of population and density.

I have allowed 100,000 souls for that part of the Southwest which lies in Mexico, but this should be regarded as a maximum. The area contains a trifle more than a third of a million square kilometers, as against nearly a full million in the American Southwest, of which the population, as based on Mooney, was 103,000. The density, then, would be nearly three times as great on the Mexican side, 28 as against 10.6. This seems liberal, both in view of the nature of the country and the tribes concerned. These are the Pima (other than Papago and American Pima), Opata, Tarahumar, Cáhita, Seri, and the bands of Baja California. Willcox[25] quotes my colleague Carl Sauer as believing that Baja California contained one Indian to a square mile, and Sonora two. This would make the density of Mexican California greater than that which I have computed for American California. It would give Sonora alone 150,000 natives, or half as many again as the whole American Southwest including southern California. Of course, it may in the end be proved that Mooney and I have throughout cut figures much too low. However, our figures are itemized, and it seems sound to adhere to them as against general impressions or ratios based on densities of occasional spots.

For the two-thirds of a million square kilometers of northeastern nonagricultural Mexico I have allowed 100,000 population, or 15 per 100-km.² unit. This is a higher density than in any of the grand areas north of Mexico, except the Northwest Coast; about the same as that of the agricultural southeastern United States; and five times as great as in nonfarming South Texas. This seems a very liberal estimate.

The 3,000,000 native population which I allow to the region of higher culture in Mexico and Central America may seem tame as against some of the figures currently mentioned; but it seems reasonable if our estimates to date have been approximately sound. The region, defined as Mexican areas 3–15, comprises a very little more than 1,000,000 km.² out of a total in the continent of about 21,000,000, or not 5 per cent of the area; but 70 per cent of the population. Its *average* density of about 300 (292) is greater than that of the most populous and restricted tribal territory elsewhere in the continent. The density is fifty-five times as great as the average north of the Rio Grande. It outweighs the density in California seven times, on the Northwest Coast ten, in the American Southwest and agricultural East nearly thirty times. All these ratios are no proofs; but they do suggest that if our figures up to this point have been tolerably reasonable, the allowance of 3,000,000 for cultural Mexico is also reasonable and perhaps liberal. The actual population in 1500 A.D. may have been more. But it may also have been less.

---

[25] Increase in the Population of the Earth and of the Continents since 1650, ch. i, pp. 33–82, in W. F. Willcox, ed., International Migrations, vol. 2: Interpretations (National Bureau of Economic Research, New York, 1931).

Modern population figures need not shake confidence in this result. According to Humboldt,[26] New Spain from latitudes 10° to 38° in 1793 contained 5,400,000 persons. The Mexican census of 1930 counted 16,404,000. To this the four northern Central American republics would add 5,500,000, bringing the total to 22,000,000. That is, the population has quadrupled in four to five generations, if the official estimates used by Humboldt were even approximately correct. If it could be assumed that the increase could be continuously projected backward, we should be starting with little more than 300,000 souls in 1500 A.D.—and that in all New Spain, not merely cultural Mexico-Guatemala. I do not wish to propose that this may have been so. But the illustration shows that we may not infer from present-day large populations to native large ones. And to assume that there was a large population, that this was reduced to a mere small fraction by the Conquest, and that then it built itself up again, is gratuitous. The Conquest no doubt did cause a shrinkage in numbers; but in the well-settled regions this effect seems to have been transient, and probably began soon to be made good by an increase attendant on the new experience of internal peace under Spanish Colonial government. As a matter of fact, the population of New Spain seems to have fluctuated in rather unaccountable ways, apart from the effects of shock of Caucasian arrival. Willcox[27] computes 5,115,000 in Mexico and Central America in 1650, but only 3,150,000 in 1750, and again, as does Humboldt, 5,400,000 in 1793. Why these fluctuations should occur in a long period of peaceful stagnation, and then be followed by a rapid and mounting rise in a period of progress but revolution and civil war, it is difficult to see. We evidently have not yet got solid ground under our feet in our knowledge of the historic population of Mexico. But for that very reason it is unsafe to do much reckoning for the prehistoric era by comparison with the present.

One thing, however, is clear. If our 3,000,000 be accepted as anywhere near the truth, there has been a definite increase not only of total population, but also of Indian population in Mexico since aboriginal times. The 1900 census of Mexico rated 38 per cent of the population as Indian, 43 per cent as mestizo. For 1921 the respective figures are 29 and 60 per cent. Census classification must needs be on a social or linguistic rather than a biological basis; but it is generally admitted that this fact is more likely to result in an undercounting than an overcounting of the Indian element. If we allow the mestizos to be half-Indian in blood—a low estimate—and thus convert them statistically into half as many Indians, the result for both 1900 and 1921 is very close to a 60-per cent Indian population in Mexico. In other words, the Indian blood is diluting by mixture, but not decreasing. Relative to purity, it is diminishing; relative to its place in the total population, it is holding its own. Now, 60 per cent of the 16,400,000 of 1930 is 9,840,000, or say about 10,000,000. Guatemala, with 60 per cent of "pure" Indians, and mestizos making up most the remainder of its total of 2,500,000, adds another 2,000,000. The total of 12,000,000[28] is four times our estimated 3,000,000 in 1500 A.D. Even if my estimate for native times should need doubling, a definite increase cannot be denied. This is the reverse of the universally admitted change in Anglo-Saxon America.

---

[26] Cited in Willcox, 24.

[27] Pp. 30, 38.

The obvious cause of the difference, though there may be others also, is that in New Spain the settled Indian was fitted into the colonial and modern economic scheme,—in fact this was built upon him; whereas in Saxon America, broadly speaking, he did not fit into the economic plan and was thrust into negligible corners like more or less picturesque rubbish.

One other consideration arises in connection with present population: how far the modern regional variations of density in Mexico correspond to ancient ones. For this reason I append map 20, which is a simplification of that by Cushing in the Geographical Review of 1921.[29] It is at once evident that in general the district of present-day heavy density is the Mesa Central and regions to the southeast; in other words, ancient cultural Mexico, areas 5–15. Guatemala and Salvador, with nearly 30 souls per kilometer, belong to the same belt of heavy density. They correspond to areas 3 and 4, which, with 5–15, make up the region to which we have assigned 3,000,000 prehistoric population and a density approaching 300 per 100 km.$^2$ Against this, Honduras and Nicaragua, to which we have allotted the much lower density of 40, or 0.4 per km.$^2$, now are also much lower, with 6. It can therefore be inferred that, in general, prehistoric, historic, and modern populations in Mexico and Central America tend to be dense and sparse in the same areas.

However, this fact does not preclude considerable shifts in relative ratios, as well as striking local ones, the former due perhaps to the introduction of domestic animals, the latter to growth of cities or intensive exploitation of mines. While from the basis of my assumptions for 1500 A.D. all parts of Mexico-Central America have increased in population, the ratio of increase has been heaviest precisely in those districts which once had the sparsest population. The Mesa Central has increased; the outlying areas have increased still more.

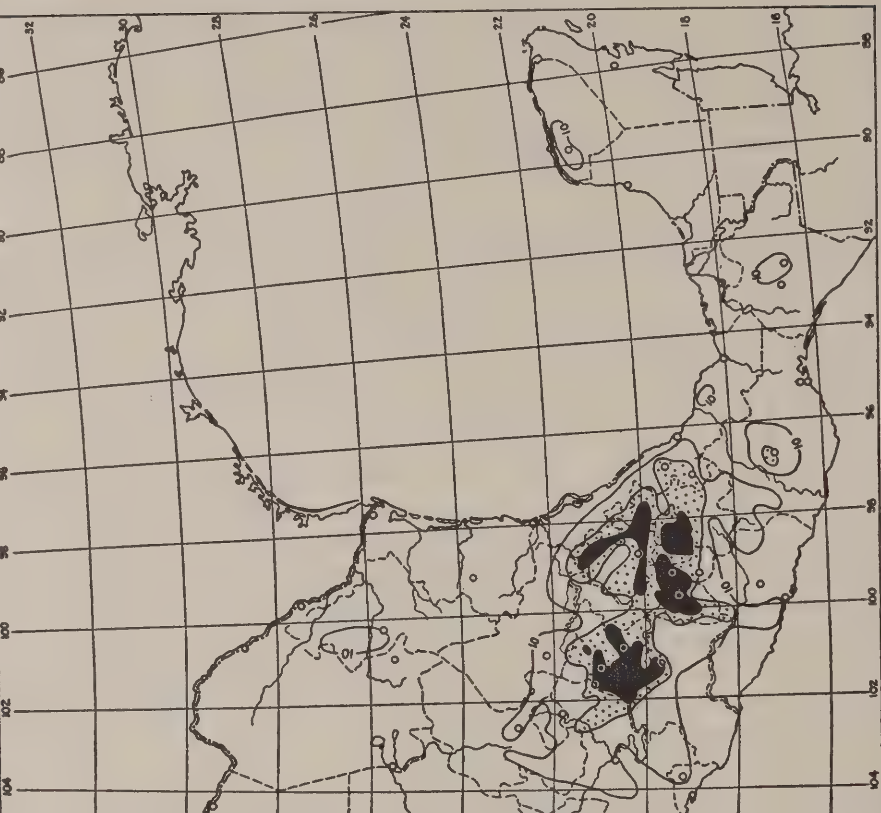
A computation by districts instead of states would make the reckoning more accurate, but has been foregone because the comparands are after all only estimates and too sharp a definition of the increase ratios would consequently be misleading. It is clear that if my estimates are reasonably sound, mining and cattle in northwest Mexico, and mining and cattle plus local agriculture in northeast Mexico, have increased the population in these regions more than Occidental civilization in general has brought it up in the anciently semicivilized and intensively farmed parts of the country. Or, so far as this result is inherently expectable, the figures may be interpreted the other way round, namely, as indicating that my estimates for the ancient population of the three regions are reasonably sound in their respective relations to one another.

The Cushing map (no. 20) may therefore be considered as giving an ap-

---

[28] This includes northern Mexico, but this would deduct barely 2,000,000.

[29] The Distribution of Population in Mexico, 11:227–242.


MEXICO
DENSITY OF RURAL POPULATION PER SQ.KM.
Unindicated under 10
10 - 20
20 - 30
above 30
SCALE OF MILES
100
0
100
200
10

Map 20. Density of Rural Population in Modern Mexico; simplified from Cushing, Geographical Review, 1921. (By permission of the American Geographic Society.) Population of towns of more than 4000 inhabitants excluded as urban. Roughly, this map is likely to reflect the proportionate density of the several parts of Mexico in native times.

proximate picture of the relative distribution of population in Mexico before the Conquest, subject to two modifications: (1) reading of the density symbols with a value about one-fifth as great in central and southern Mexico, about a tenth as great in the north; and (2) omission of practically all northern spots of concentration as due to centers caused by mining, industry, irrigation, government, or other factors leading to local urbanization.

The matter of actually cultivated area in native cultural Mexico (areas 3–15) has already been gone into. It suffices to repeat that, on the basis of one acre per head, some 3,000,000 acres were being planted, as against 30,000,000 now estimated as cultivated or cultivable, or 15,000,000 given as cultivated in specified crops. This means that as against one two-hundredth or less in the eastern United States, ancient Mexico in general farmed perhaps a fifth of what it farms today, and that fifth presumably the best or most easily productive. In regions like the Valley of Mexico considerably more than a fifth may have been farmed; in other parts, like Jalisco, the proportion may have been less.

TABLE 12

ESTIMATED INCREASE OF POPULATION IN MEXICO

| Areas | Population in 1930 | Percentage of 1930 pop. | Population in 1500 | Ratio of increase |
|---|---|---|---|---|
| Northeastern Mexican areas 16–18, corresponding roughly to Aguas Calientes, Coahuila, Durango, Nuevo León, San Luis Potosí, Tamaulipas, Zacatecas.............. | 2,750,000 | 17 | 100,000 | × 30 |
| Southwest areas 3–6, 9, corresponding roughly to NW Mexican states of Chihuahua, Sonora, California.. | 900,000 | 5 | 100,000 | × 9 |
| Mexican areas 5–15, corresponding roughly to remaining states of Mexico.......................... | 12,750,000 | 78 | 2,200,000* | × 5–6 |
| Same, plus areas 3 and 4, or Guatemala and Salvador, nearly........ | 17,000,000 | .. | 3,000,000 | × 5–6 |

* Estimated at about three-fourths of 3,000,000.

As to the question whether one acre per head was sufficient for needs, we have corroborative data from Peru, where the tupu was the unit, one tupu being assigned to each newly married couple for subsistence, with an additional tupu for each boy child and half a tupu for a girl. That is, between a half-tupu and one tupu sufficed to feed a person. But the area of the tupu was less than half an acre, the estimate of its usual dimensions being 60 paces by 50.[30] At this rate, 1,500,000 cultivated acres would have kept the 3,000,000 Mexicans. This does seem scant.

---

[30] See P. A. Means, Ancient Civilizations of the Andes, 289, 313, 1931, and the authorities cited by him, especially Garcilaso and Baudin, L'Empire Socialiste des Inka, Institut d'Ethnologie, 5:90–91, 1928.

## THE HEMISPHERE

As we have in some measure covered the northern continent, it may be worth while to digress briefly to cast an eye on population in aboriginal South America, and therewith in the hemisphere.

The subject has recently been gone into independently by Sapper[31] and Spinden;[32] subsequently, Willcox[33] has touched on it in a study of the population of all continents since 1650; and there is also an estimate by Rivet.[34]

Sapper's estimate, admittedly based on impressions, is, for the pre-Conquest period:

| *Geographic area* | *Millions* | *Geographic area* | *Millions* |
|---|---|---|---|
| North of the Great Lakes...... | 0.5 | West Indies ................ | 3–4 |
| Great Lakes to the Rio Grande.. | 2–3 | Tropical Andes .............. | 12–15 |
| Mexico ...................... | 12–15 | Tropical eastern South America | 2–3 |
| Central America ............. | 5–6 | Temperate South America..... | 1–2 |
| *Total,* about........................................ | | | 40–50 |

This seems much too high. The figures for Anglo-Saxon America, 2,500,000 to 3,500,000, are three times Mooney's. At the same ratio, the hemispheric total would shrink to 15,000,000. We may note this: the population of South America and the West Indies is held at slightly less than that of North America, Mexico and Central America contributing about 45 per cent of the hemispheric total.

Spinden begins by computing the present numbers of American Indians. Converting mixed blood into "equivalent" of pure population, he finds 26,000,000 Indians in the hemisphere. Of these, 48 per cent or 12,500,000 are in Mexico and Central America. He then concludes that there were more than 26,000,000 at the discovery, European contact having heavily diminished numbers. Some centuries earlier, numbers were still higher. The argument on this point is interwoven with hypothetical considerations on the origin of agriculture, expansion of dry and wet land farming, number and size of constructions, the influence of yellow fever, and other long-range visions. But a figure two or three times the present, say 50,000,000 to 75,000,000, is set for around 1200 A.D.

Spinden's article is stimulating because genuinely imaginative, but most of his evidence is not directly pertinent to the question of population size, and his figures come to little more than guesses.

Willcox is not concerned with aboriginal conditions as such, except to note that Americanists seem to believe the population was considerably higher at the discovery than about 1650, the date of his first summation. On various grounds, including some interesting data[35] for parts of South America by

---

[31] Die Zahl und Volksdichte der indianischen Bevölkerung in Amerika vor der Conquista und in der Gegenwart, ICA 21 (1924, The Hague):95–104, 1924.

[32] The Population of Ancient America, Geogr. Rev., vol. 18, no. 4, 1928; reprinted in SI–AR 1929:451–471, 1930.

[33] Increase in the Population of the Earth, as cited in note 25 above, pp. 1–50.

[34] In Meillet and Cohen, Les Langues du Monde, 599–602.

[35] Pp. 26–30.

Schmieder, he comes to the estimate given in table 13 for the middle of the seventeenth century.[36] Mexico and Central America are thereby credited with 39 per cent of the total.

Rivet estimates that there are about 15,000,000 Indians now living. North of the Rio Grande they have decreased from 1,148,000 at discovery to 403,000 at present. The same ratio of decrease applied elsewhere yields a tentative figure for the hemisphere of 40,000,000 to 45,000,000 maximum at discovery, or about one soul per square kilometer over all.

Means[37] has recently ventured a tentative computation for the Inca empire at its height: 16,000,000 to 32,000,000. The basis is one of multiplication up from small administrative units.

TABLE 13

Population of the Americas, 1650 A.D.

(Willcox)

| Geographic areas | Numbers | | |
|---|---|---|---|
| United States, Canada, Alaska (Mooney, corr. by Kroeber, Kidder) | | 1,002,000 | |
| Mexico, sparsely settled (548,000 sq. mi.) | 2,180,000 | | |
| Mexico, densely settled (219,000 sq. mi.) | 1,450,000 | | |
| Central America | 1,485,000 | 5,115,000 | |
| North America | | | 6,117,000 |
| West Indies | | | 614,000 |
| South American "plateau" districts (central Andean, 400,000 sq. mi.) | | 3,036,000 | |
| South American remainder | | 3,334,000 | |
| South America | | | 6,370,000 |
| Hemisphere, all races, about 1650 A.D. | | | 13,101,000 |

Now for my own guesses, which I admit to be such, except that I am guided by comparison with the Mexican estimates, which in turn rest on comparison with the additive figures and densities north of the Rio Grande.

Sapper's and even Willcox's figures for the West Indies seem to me too high. For South America I would assume a general ratio between the Andean region and the rest of the continent similar to that between cultural Mexico-Central America and the rest of North America. Three souls in the Inca empire for every one in the rest of South America does not seem disproportionate. This empire was somewhat more extensive than cultural Mexico-Guatemala; but it contained more desert and very high regions. The same figure as for Mexico—3,000,000—thus seems reasonable. This practically gives the total result, which may be summarized as in table 14.

I know of but one piece of evidence to support these figures, Juan López de Velasco's[38] statement, cited by Willcox,[39] that in all the reduced and pacified parts of the new world there were in 1574 a million and a half taxpaying or tributary Indians in eight or nine thousand towns, nations, or tribes; women, children, adolescents, the old, and the escaped and unpacified not being included. As Willcox says, this implies a population of about 6,000,000. The areas involved would be primarily the high-cultural parts of Mexico-Guatemala (including Nueva Galicia) and the Inca empire, plus the rest of Central America, Colombia, the northern coast of South America, the West Indies, Chile, and perhaps some tracts in Brazil and the La Plata drainage. All these together would have had a somewhat larger population originally than 6,000,000, by my estimates; but some decline would have to be allowed to have taken place between the Conquest and 1574. On the whole, I see fair corroboration in Velasco's figures.

---

[36] P. 30, table 10.

[37] Ancient Civilizations of the Andes, 296, 1931.

[38] Geografía y Descripción Universal de las Indias, Madrid, 1894, p. 2.

[39] P. 24.

TABLE 14

Population of the Western Hemisphere, 1500 a.d.

| Geographic areas | Numbers | |
|---|---|---|
| North of the Rio Grande (Mooney total reduced) | 900,000 | |
| Northwest Mexico | 100,000 | |
| Northeast Mexico, probably less than | 100,000 | |
| Central and Southern Mexico, Guatemala, Salvador | 3,000,000 | |
| Honduras, Nicaragua | 100,000 | |
| *Native North America* | | 4,200,000 |
| Inca empire | 3,000,000 | |
| Rest of South America, including Panama, Costa Rica | 1,000,000 | |
| West Indies | 200,000 | |
| *Native South America* | | 4,200,000 |
| *Western Hemisphere,* 1492 a.d. | | 8,400,000 |

I admit that my figures are low. They will therefore challenge to correction, I hope, if correction can be produced. Certainly the data for Anglo-Saxon America suggest that the current estimates for the hemisphere run too high. I also admit that my 6,000,000 allowance for Mexico and Peru may have to be doubled, for aught I can prove to the contrary. But I also submit that it may deserve halving, for all that anyone else has yet proved. What we need is primary data—step-by-step records or local estimates by conservative contemporaries, which will yield interpolations for the gaps, and can then be used as a basis for comparative estimates of less accurately described areas. It is only a matter of labor and fair judgment to extract these data from the documentary sources and thus give us reasonably reliable knowledge.

## Shore-line Population Density

The obvious importance of tidal shore line population and its density has led me to inquire into the problem so far as possible; and with some rather unexpected results.

The United States data are derived from the Coast and Geodetic Survey.[40]

---

[40] Serial no. 22, 1915.

Those used are for tidal shore line, including islands, measured in one-mile steps.[41] As segregated by states, they run:

Maine, 1319; New Hampshire, 20; Massachusetts, 671; Rhode Island, 218; Connecticut, 144; New York, 829; New Jersey, 760; Pennsylvania, 13; Delaware, 154; Maryland, 1045; Virginia, 1280; North Carolina, 1871; South Carolina, 1241; Georgia, 893; Florida, Atlantic side, 1221, Gulf side, 2530; Alabama, 291; Mississippi, 202; Louisiana, 1713; Texas, 1682; total Atlantic, 18,097.

California, 1555; Oregon, 489; Washington, 1721; total Pacific, 3765.

Alaska, estimate, by myself, 25,000.

The Canadian data were supplied directly by the Hydrographic Service of the Dominion of Canada, to whose courtesy acknowledgment is herewith made. They were "taken from small-scale general maps of Canada, with the aid of a Universal Map Measurer." The constant for the Measurer was obtained on a brass scale. "Therefore the distance measured may be accepted as correct, and any errors will be attributable to the extremely sketchy nature of a great deal of the coast line in question which has never been properly charted." The true relation of the Canadian to the United States figures is not known to me, but comparison of them with samples of coast line as inspected on a map of the continent suggests that the two sets of data are fairly close in their agreement or divergence from the actual coast line. The Canadian figures are:

Mainland, international boundary to Labrador boundary, 3068 statute miles; principal islands, 1519.

Labrador, with islands, 2446; Newfoundland, with islands, 3251.

Hudson Strait mainland, Cape Chidley to Cape Digges, 1244; principal islands, 61.

Hudson Bay mainland, Cape Digges to Cape Hope, Repulse Bay, 3160; principal islands, 2309 (*sic*).

Arctic Coast mainland, Cape Hope to Alaska boundary, 5772; Arctic islands, 26,782.

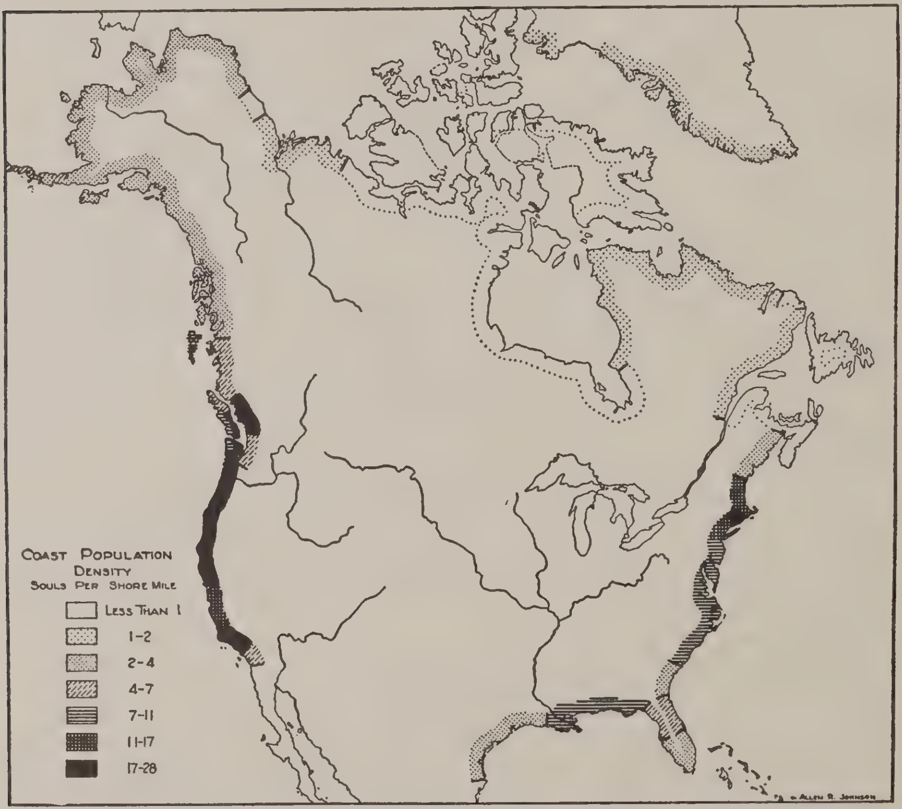
Pacific Coast mainland, Alaska to international boundary, 1580; principal islands (Vancouver and Queen Charlotte), 3980.

For Greenland I have been unable to find any figures, so have estimated by map inspection.

The next step was to allot the shore line of each unit, such as Canadian Arctic Coast, or New York, among the several tribes occupying this shore. This was done by visual inspection of map 1 to within 50 or 100 miles for each tribe, or each group of tribes whose population is given as a unit. Although approximate, these inspection estimates seem to me fairly sound. I am much less certain of the division of some tribes into their coastal and noncoastal population. Here, distance on the map is no guide. Among most Eskimo and Northwest Coast groups, for instance, territory 100 or even 200 miles inland might be owned and seasonally hunted over, and yet the permanent settlements all be on the ocean. The whole population can therefore safely be reckoned as living on the shore line and making use of it. But how many of the 13,600 estimated Indians of the Massachuset group would it be fair to assume to have been actual coast inhabitants or shore-line users? Or of the 8000 Pomo? I have gone on the basis of counting as coast population all the natives who lived within a one or two days' foot journey of tidewater and might therefore be presumed to have visited the beach fairly regularly each year. The numbers of such estimated groups are marked by daggers; as, 10,000† Massachuset, 4000† Pomo and Coast Miwok. These figures undoubtedly need revision by local authorities and specialists on tribes.

---

[41] Three sets of figures must be distinguished: General coast line in 30′ latitude steps; tidal shore line in three-mile steps, including islands; tidal shore line in one-mile steps, including islands. (The miles are statute, not nautical.) The three sets of figures of course differ considerably: thus, Maine, 228, 676, 1319; Texas, 367, 1100, 1682; California, 913, 1190, 1555; Washington, 157, 908, 1721. The one-mile-step figures have been used throughout, except for Alaska, where they are unavailable and 15,132 miles in three-mile steps have been replaced by an estimated equivalent of 25,000 miles in one-mile steps.



Map 21. Coast Population Densities in the Native Period; based on tables 7 and 15.

At any rate, we arrive in this manner at figures for shore-line mileage and for coast-using population by tribes or groups of adjacent tribes; and from these, for shore-line population densities; as set forth in table 15 and map 21. Like all my figures and conclusions on population, they are subject to revision by more accurate data when available.

On the whole, the shore line density results agree more closely with areal density than I should have expected. Most of the Eskimo, for instance, depend so heavily on sea mammals, and most of the California Indians so secondarily on food from the ocean, that I anticipated a more or less equal shore-line density for the two, in spite of the obviously greater areal density in California; whereas the outcome seems to be a ratio of one to ten. The following summary is convincing on this point:

| *Area* | *Shore mi.* | *Population* | *Density* |
|---|---|---|---|
| Eskimo | 48,000 | 89,700 | 2— |
| Northwest Coast | 11,850 | 86,300 | 7+ |
| California areas | 800 | 14,000 | 17.5 |
| Southwest (in southern California) | 600 | 15,000 | 25.0 |
| Eastern areas | 21,500 | 99,300 | 5— |
| Northern areas | 5,550 | 2,000 | 0.4 |

In a very rough way, the native population for each mile of tidal shore line was about the same as that of 100 square kilometers or a United States township, over the whole of each major area.

An itemized consideration also yields some points of interest.

*Arctic Coast.*—The concentration of the Eskimo in the west is as notable as on the basis of area held: about 1 per coast mile in the east, 3 in the west if the Aleut are included, 2 without—thus at least on the basis of Mooney's figures.

*Northwest Coast.*—The southward increase of shore-mile population is notable. The Tlingit show the lowest density. That of the Haida and Tsimshian is higher. About the same figure is maintained for the Kwakiutl, Nutka, and associated tribes. For the Gulf of Georgia Salish the density is doubled or trebled, to around 20 per mile—about as high a figure as is found anywhere,—and this is approximately maintained to the limit of the area at Cape Mendocino; although from the Columbia south there is an inland river population in addition to the true coastal one—a situation which does not hold in most of the northerly parts of the area. South of Cape Mudge only the backwater of Puget Sound shows a medium density.

*Intermediate and Southwest.*—Roughly, California maintains the shore-mile density of the southern Northwest Coast, increasing it, in fact, to perhaps 28 in the Santa Barbara Channel region.

*Eastern areas.*—Nowhere in the eastern United States is the shore density very low, although its average is only moderate. The nonagricultural Texas coast and southern Florida tribes seem to have run about 3 persons per coast mile; the agricultural Chitimacha, Muskogians, and Timucua, around 7. That is, the addition of maize to tidewater foods allowed the population to double. North of Florida, the density of coastal Muskogians, Siouans, and Algonkins seems to have been somewhat less than on the Gulf shore. With the Powhatan of tidewater Virginia, the density begins to mount. It drops somewhat among the Nanticoke and Delaware, but rises rapidly for Montauk, Wappinger, Pequot, and Massachuset, unless Mooney's figures for these groups are exorbitantly swelled. This means that between New York and Boston the native coast-using population was heavier than anywhere on the Atlantic or Gulf coast, and nearly as dense as along the most populous stretches of the Pacific coast. The reason for this concentration is far from clear, especially since neither general level of culture nor political organization was as much developed as farther south.[42] This New York-to-Boston coast population seems to have been the densest of all Algonkian ones.

---

[42] A possible explanation is this. From New York south, the Atlantic coast plain is of considerable width. From near Boston northward, the New England province of the Appalachian Highlands system is reckoned as extending to the shore (map 7). Between New York and Boston, Long Island and Cape Cod are counted as part of the coastal plain, the rest of the coast with the Highlands. This is, accordingly, the only stretch of coast between the St. Lawrence and the Rio Grande which is physiographically mixed, and hence perhaps of more varied subsistence opportunities. Further, native farming possibilities were still good in southern New England. Compare "Climate" in Sec. XIII, and map 27.

## TABLE 15

### Shore Line and Population

| Areas | Peoples | Miles of shore line | Population | Persons per mile |
|---|---|---|---|---|
| | *Arctic Coast* | | | |
| 1a | Greenland, inhabited (estimated) | 6,000 | 10,000 | 1.70 |
| | Labrador | 2,450 | 3,600 | 1.50 |
| | Central Eskimo | 17,150 | 16,600* | 0.97* |
| 1b | Caribou Eskimo | 500 | | |
| 2a | Mackenzie | 1,400 | 2,800 | 2.00 |
| | Point Barrow (west to Cape Lisburne) | 1,000 | 3,000 | 3.00 |
| | Bering Sea (Malemiut to Alaska Peninsula) | 12,000 | 25,700 | 2.10 |
| 2b | Aleut | 3,500 | 16,000 | 4.60 |
| 2c | Pacific Ocean Eskimo | 4,000 | 11,300 | 2.80 |
| | *Northwest Coast* | | | |
| 1a | Northern Tlingit | 1,000 | 2,500 | 2.50 |
| 1b | Southern Tlingit | 3,000 | 7,500 | 2.50 |
| | Haida | 1,200 | 9,800 | 8.20 |
| | Tsimshian | 500 | 3,500 | 7.00 |
| 1c | Niska, Gitskyan, Haisla | 400 | | |
| 2a | Bella Coola, Heiltsuk, Kwakiutl | 1,400 | 7,300 | 5.20 |
| 2b | Nutka, Makah, Quileute, Quinault | 1,200 | 10,000 | 8.30 |
| 3 | Gulf of Georgia | 1,200 | 23,700 | 20.00 |
| 4 | Puget Sound | 1,000 | 6,000 | 6.00 |
| 5 | Chehalis, Chinook, Tillamook, Yakonan | 650 | 12,000† | 18.00 |
| 7 | Oregon Athabascan, Tolowa, Yurok, Wiyot | 300 | 6,000† | 20.00 |
| | *Intermediate* | | | |
| 2c | Mattole, Sinkyone | 100 | 2,000† | 20.00 |
| 2b | Pomo, Coast Miwok | 200 | 4,000† | 20.00 |
| 2a | Coast Yuki, Costano, Esselen, Salinan | 500 | 8,000† | 16.00 |
| | *Southwest* | | | |
| 10 | Chumash, Gabrielino, Luiseño, Juaneño | 500 | 14,000† | 28.00 |
| 9 | Diegueño | 100 | 1,000† | 10.00 |
| | *Mexican* | | | |
| | Coahuiltec in U. S. | 500 | 2,000† | 4.00 |

* Includes Mooney's 6000 "on islands west of Baffinland." Without these, the density is 0.62.

† Estimated: part only of the tribes named.

TABLE 15—(*Continued*)

| Areas | Peoples | Miles of shore line | Population | Persons per mile |
|---|---|---|---|---|
| | *Eastern* | | | |
| 3 | Karankawa, Atakapa | 1,400 | 4,300 | 3.10 |
| 1a | Southeast coastal; Chitimacha to Apalachi | 3,000 | 23,000† | 7.70 |
| 1c | Timucua | 1,200 | 8,000 | 6.70 |
| 2 | South Florida tribes | 1,500 | 4,000 | 2.70 |
| 1a | Southeast coastal, Stono to Yamasi | 1,600 | 4,400 | 2.80 |
| 12b | Siouan coastal tribes | 1,000 | 5,000† | 5.00 |
| 12c | Algonkins of North Carolina Sound | 1,400 | 4,500 | 3.20 |
| 12d | Powhatan | 1,300 | 9,000 | 6.90 |
| 11 | Conoy, Nanticoke | 1,050 | 4,700 | 4.50 |
| | Delaware | 1,000 | 4,000† | 4.00 |
| | Montauk | 600 | 6,000 | 10.00 |
| | Wappinger | 200 | 3,000† | 15.00 |
| | Pequot | 50 | 1,100† | 22.00 |
| | Massachuset | 850 | 10,000† | 11.80 |
| | Pennacook | 100 | 1,000† | 10.00 |
| 10 | Abnaki | 1,350 | 3,800 | 2.10 |
| | Micmac | 3,900 | 3,500 | 0.90 |
| | *Northern* | | | |
| 15 | Montagnais | 600 | 1,000† | 1.70 |
| | Beothuk | 3,050 | 500 | 0.16 |
| | Cree | 1,300 | | |
| 16a | Khnaia-khotana (of Cook Inlet, Alaska) | 500 | 500† | 1.00 |
| 16b | Caribou-eater | 100 | | |
| | *Uninhabited lands* | | | |
| | Arctic and Hudson Bay islands | 18,700 | | |
| | Greenland | ? | | |

† Estimated: part only of the tribes named.

Beginning with the Abnaki of Maine there is a rapid decrease of density, which is carried still lower among the Micmac, Montagnais, and Beothuk. It looks as if deer had been a more important food than mollusks and fish among these nonagricultural tribes. In what I have reckoned as Northern as distinguished from Eastern areas, the actual coast is almost everywhere left to the Eskimo, by both Algonkins and Athabascans. Even where there were no Eskimo, as in Newfoundland, southern Hudson Bay, and Cook Inlet, there is little indication that the shore counted very much in the economy of the northern Algonkins and Athabascans.

North of Mexico there may be reckoned about 300,000 coast dwellers or seasonal users of the coast—about three-tenths of the total population. These occupied some 80,000–90,000 miles of tidal shore, or somewhat under 4 souls per mile—say 6 per kilometer. If the coast were measured finely enough, so as to approximate actual tidal shore line in nature, the density would probably shrink to 3 and 5 per mile and kilometer.

Of these totals, the Eskimo held well over half the mileage and contributed under a third of the population, with a mile density of less than 2.[43] South of the Eskimo, the average density was about 6. The highest densities were on the Pacific coast between latitudes 33° and 50°, and on the Atlantic between 41° and 43°. The reasons for these optima are not wholly clear. The nature of the shore within their limits varies widely, and cultural factors are likely to have contributed as much as environmental ones to the concentrations.

### POPULATION SIZE OF LANGUAGE GROUPS

It is worth while also to consider population size of the linguistic stocks or families as they are currently recognized in ethnological connections.[44] For this purpose I have compiled the following list from Mooney's figures, which are uncorrected except as always for California. The total accounted for differs by about 2 per cent from Mooney's, owing to the difficulty of identifying some of his groups in terms of mine, with resulting overlaps and omissions, which also render a completely authentic check of the additions impossible. The discrepancy, however, is not very material in view of the fact that so many of the population figures are mere estimates.

It appears that more than 70 per cent of the native population north of Mexico was comprised in 8 speech stocks, each numbering above 50,000 souls, and averaging not far below 100,000. Eighteen other stocks, according to Mooney, range from 27,000 down to 6000, with an average not far from 12,000. The remaining 30 run from 5000 to 500, with an average of 2000.

The geographic distribution is of interest. Of the 8 most populous stocks, the first, third, fourth, and fifth are situated in Atlantic drainage; the second, sixth, and seventh, mainly in Arctic or interior drainage; only the eighth in Pacific drainage. For the second group, of medium stocks, conditions are reversed: only 4 lie in Atlantic, 15 in Pacific drainage. The small stocks also are prevailingly western: 11 Atlantic, 1 interior, 0 Arctic, 18 Pacific drainage.

In short, the Atlantic, Arctic, and interior drainages are regions of relatively populous speech families; the Pacific area, one of many small stocks. As the eastern and northern speech areas are, on the whole, also territorially large, and the Pacific ones small, the populational density does not differ so markedly as does the absolute population of the families—though the density is on the whole definitely higher along the Pacific. This is the more notable in that almost the whole Pacific drainage area north of Mexico is nonagricultural, most of the Atlantic area agricultural, as already discussed.

The causes of this relative speech diversity and homogeneity, respectively, of the Pacific and Atlantic-Arctic areas are by no means clear. Climatically and vegetationally the Pacific drainage is on the whole the more diverse, but by no means so much so as speech. Topography may be of some moment, but it hardly seems to account directly for the difference. If we knew positively of Asiatic or Oceanic intrusions into the Pacific coast, the situation might be accounted for. But conservative opinion does not yet recognize any trans-

---

[43] The uninhabited arctic island coasts within Eskimo range are omitted. If these had been included, the Eskimo density would sink to about 1 person per mile.

[44] That is, the old Powell classification, mainly.

Pacific linguistic affiliations which would be proof of such intrusions. It looks therefore, by exclusion, as if the causes lay in something in the life habits of the Pacific-drainage peoples; and until this ethnic or cultural something is more clearly recognizable, the part which environment played in establishing it can scarcely be defined.

In support of this view is the situation within certain of the augmented linguistic families as recognized by Sapir. His Na-Dene comprises Athabascan, Tlingit, Haida. The widely separated Athabascan divisions are far more similar to one another than Tlingit to Haida on the Pacific margin. Enlarged Algonkin includes Kootenay, Salish, Wakash, Chimakum, Yurok, Wiyot—all in Pacific drainage, and so diverse as to cause many still to regard them as unrelated. However, all the Algonkin languages in the narrower sense, except Arapaho, were recognized as related as soon as vocabularies of them became available—even Blackfoot; and Arapaho was included as long ago as the Powell classification. Similarly with Sapir's Hokan-Siouan, which takes in Coahuiltecan, Muskogian, Caddoan, Iroquoian. Distinct as are some of the languages that go to make up each of these groups, their genetic adhesion within their group was accepted long ago. But the Hokan group alone—the one Pacific member of Hokan-Siouan—contains as many languages reckoned until recently as distinct families as all the rest of Hokan-Siouan.

Even if one hesitates or refuses to accept the Sapir and other modern unifying classifications, and adheres sacrosanctly to the old Powell classification of 1891, one must admit at least one similar situation. The interior or Great Basin Shoshonean languages—Shoshone, Ute-Chemehuevi, Mono-Bannock—are sufficiently similar to constitute a single unit within Shoshonean—the Plateau branch. The three coördinate branches, Hopi, Kern River, and Southern California, are all in Pacific drainage, and all very much smaller territorially. The Southern California branch alone falls into three subdivisions which differ from one another approximately in the same degree as the three much more widely spread Plateau branch subdivisions.[45]

Although the original causes of this disparity remain obscure, there can be little question that once conditions were different in the two sets of areas, the conditions themselves would act as causes for further and cumulative differentiation. In an area of nearly homogeneous speech, each dialect would tend to remain anchored, as it were, to the others, through contact with them. The same dialect transposed into a milieu mainly of contacts with wholly diverse languages would not only lose this stabilizing influence, but also would tend to get new change processes started within it by alien contact. Reference here is by no means wholly to borrowing of either form or content. Such borrowing may be inappreciable, and yet an unconscious disturbance of the established speech be set up by the presence of a fairly large number of bilingual speakers. The involved psychological mechanisms are as yet too obscure to be proved or even illustrated by concrete examples. But that mechanisms of this sort must

---

[45] The facts are discussed at greater length in my Shoshonean Dialects of California, UC–PAAE 4:65–165, 1907, esp. pp. 97–101. For maps of Shoshonean divisions see BAE–B 78:579, 1925, and UC–IA no. 8, 1934.

## TABLE 16

### Population by Linguistic Stocks

(Based on Mooney)

| | | |
|---|---|---|
| *Large stocks* | | |
| Algonkin | | 192,400 |
| Eskimo (excl. Asia) | 73,700 | |
| Aleut | 16,000 | 89,700 |
| Siouan | | 88,500 |
| Iroquoian | | 71,700 |
| Muskogian | | 66,500 |
| Uto-Aztecan: Shoshonean | 52,500 | |
| Piman | 10,600 | 63,100 |
| Athabascan: Southwest | 15,200 | |
| Northern | 28,900 | |
| Pacific Coast | 16,400 | 60,500 |
| Salish | | 57,900 |
| (Five Calif. Penutian, 57,000) | | |
| (Hokan, 49,100) | | |
| (Calif. Hokan excl. Yuman, Washo, 30,500) | | |
| *Medium stocks* | | |
| Caddoan | | 26,400 |
| Tanoan | | 24,500 |
| Chinook | | 22,000 |
| Sahaptin | | 18,100 |
| Yokuts | | 18,000 |
| Yuman | | 17,600 |
| Wakashan | | 15,200 |
| Coahuiltecan | | 15,000 |
| Wintun | | 12,000 |
| Tlingit | | 10,000 |
| Miwok | | 10,000 |
| Chumash | | 10,000 |
| Haida | | 9,800 |
| Maidu | | 9,000 |
| Timucua | | 8,000 |
| Pomo | | 8,000 |
| Tsimshian | | 7,000 |
| Costano | | 7,000 |
| Yakonan | | 6,000 |
| *Small stocks* | | |
| Thirty smaller stocks or groups | | 60,800 |
| | | 1,004,700 |

TABLE 16—(*Continued*)

| | | |
|---|---|---|
| Eight large stocks, above 50,000 | | 716,700 |
| Eighteen medium stocks, 27,000–6,000 | | 227,200 |
| Thirty stocks under 6000 | | 60,800 |
| | | 1,004,700 |
| Unidentified, overlaps, or errors | | 21,250 |
| | | 1,025,950 |
| California correction, 133,000 for 260,000 | | 127,000 |
| Mooney's total | | 1,152,950 |

exist is shown by the fact that the most diverse dialects or languages within a larger speech unit occur almost invariably at the territorial periphery of the unit, almost never at or near its heart. Examples are: Blackfoot, Arapaho, and possibly Beothuk in Algonkin; Natchez in the larger Muskogian; Mandan and Hidatsa-Crow in Siouan; Aleut in Eskimo; the Southeastern (Lower Lake) language in Pomo; foothill and southern dialects in Yokuts; Cochimí in Yuman; Huastec in Maya.

One tentative venture may be made to estimate what lies at the root of these self-increasing tendencies toward differentiation. The relation of subsistence areas and habitation sites on the Pacific coast seems to have been generally different from that obtaining elsewhere. Pacific Coast subsistence areas tend to be definitely limited to a valley or a river, sometimes to a stretch of coast. Between these are tracts which yield too little, under the customary techniques, to support existence adequately—mountains, dense forest, dry chaparral, creekless stretches, as the case may be. The actual subsistence areas are thus in the nature of oases, or, along larger rivers, ribbons of oasis. The hinterland was usually claimed and somewhat utilized, but to a distinctly secondary degree. The habitat sites were of course in the oases. Their situation was thus fixed within narrow limits; and the group became quite definitely sessile and often extraordinarily attached to certain spots and small tracts. Trade did not disturb this rooting, but passed over it. Culturally there might be essential uniformity between a series of such localized groups, and yet the ethnic individualization, continuing for perhaps thousands of years, would favor the presumably ever-present impulses toward speech diversification. The same soil-rooted individualization may be at the bottom of the inability of all Pacific Coast peoples to achieve anything like political organizations.

This type of territorial relation or land use would perhaps be least definite along the actual ocean shore, because even though the hinterland remained almost unused, the occupation of sea frontage would presumably be relatively continuous. But from Cape Mendocino south, except in the little Santa Barbara Archipelago, the cultures are nonmaritime and land-determined even on actual salt water; from there north, in the Northwest Coast area, they seem to be still-water and especially river cultures in origin, according to the views developed above. Also, the stretch in which alone they can be considered true maritime cultures even in the late period, namely from Cape Flattery to Yakutat Bay, held only five major speech divisions—Nutka, Kwakiutl, Tsimshian proper, Haida, Tlingit[46]—or definitely fewer than the coast to the south.[47]

Elsewhere than on the Pacific coast, only a small part of the area belonging to a group was normally exploited, where there was agriculture, and that part was chosen only as preferential, often randomly so far as farming possibilities were concerned. The actual habitation sites, like the farms, thus could be and were moved. A tributary often answered subsistence problems about as well as a main stream;[48] and beyond that there were likely to be still other suitable streams within the tribal territory, practically all of which remained exploitable, though only a small fraction were exploited. There is no inherent geographical reason why the tracts actually lived in by the five historic Iroquois tribes should have been those actually occupied, rather than several dozen about equally suitable ones in central New York; and the archaeological remains show that many of these others were settled at one time or another. The same holds true of most of the Algonkins, Siouans, Muskogians of the East. Wherever serious attention has been given to geography, as by Swanton for the Southeast, it is clear that farms and towns did shift. The whole distribution of sites in the mound area strongly suggests the same condition. Populational mobility, first within tribal areas, and, beyond that, between areas, accordingly was fairly high. Ethnic individualization through rooting in the soil therefore tended to be prevented rather than stimulated; and with it, speech differentiation.

In the nonfarming areas, like the Great Basin and northern transcontinental forest, the whole of an ethnic territory was likely to be exploited for food; many had to be. Also, one tract was likely to be about as productive as another, or if not so most of the year, then more so at one season. The group therefore scattered, and habitually ranged most or all of its territory. Again, then, although for different reasons, there would be a minimum of soil rooting, of group separateness and individualization, a maximum of habits of mobility, with resultant weakness of provincializing and speech-diverging tendencies.

In short, in the Pacific drainage, only fractions of ethnic territories were normally exploitable under native culture habits, and the used and inhabited tracts tended therefore to be permanently discrete, thus affording opportunity for differentiating impulses in speech development to flourish. East of the Pacific drainage, ethnic territories often were completely exploited in hunting-gathering regions, and normally were very imperfectly exploited in agricultural regions, but in general were more or less totally exploitable, so that the populated sites tended to be shiftingly confluent, with the result that the conserving and assimilating influences within languages were afforded preponderant scope. This is theory, so far as the inferences about the effects on speech are concerned. The difference in land use seems real, in the main; as to the degree of its influence on language, estimate will probably vary, but it appears to be at least one plausible factor.

---

[46] Besides small groups like Quileute, Quinault, Bella Coola, Tsetsaut—some of them not strictly maritime.

[47] The Eskimo are inclusible neither in the Pacific nor in the other grand area. Whatever its ultimate origin, Eskimo culture as a whole in its historic or recent phase is so preponderantly sea-attached or salt water-determined that it cannot properly be classified as land-utilizing in a sense comparable to that in which the other cultures are here considered.

[48] The Yazoo, for instance, as compared with the corresponding stretch of the Mississippi.

## APPENDIX: LATER DATA

I list here, as of 1936, the principal publications on population since 1932 which may necessitate corrections of the foregoing section.

I. *Northwest Mexico.*—Sauer has issued another of his revolutionizing studies: Aboriginal Population of Northwestern Mexico.[49] In this he deals with the coast and mountain tribes between the Gila and the Santiago, estimating for them a population of 540,000 ±, or three-fourths the present population of the same area. Cora, Huichol, Tepehuán, and Tarahumar are not included. The figures are much higher than mine.

| | *100 km.²* | *Population* | *Density* |
|---|---|---|---|
| Pima, Lower and Upper | 1,387 | 55,000 | 40 |
| Opata and Jova | 503 | 65,000 | 129 |
| | 1,890 | 110,000 | 59 |
| Cáhita proper | 271 | 115,000 | 424 |
| Guasave, Comanito, Mocorito | 151 | 40,000 | 265 |
| Barranca tribes of Fuerte and Mayo | 140 | 30,000 | 214 |
| | 462 | 185,000 | 400 |
| Seri | 204 | 5,000 | 25 |
| Total | 2,556 | 300,000 | 117 |

These are my Southwest areas 4, 3, 6, with an area of 2498 square kilometers, to which I allow, with areas 5 (Tarahumar) and 9 (Peninsular California), a round 100,000 souls in Mexico; plus 10,600 in the United States. From this total there would have to be deducted the population of areas 5 and 9, say 40,000–50,000; leaving, in the same territory as Sauer's, at most 70,000 natives, as against his 300,000; and with a density of 28 as against 117.

It is difficult to meet Sauer's citations of seventeenth-century figures except with the generic supposition that the Spaniards counted or estimated excessively. The contrast with the Mooney estimates is certainly striking. Compare, for instance: American Pima-Papago, density 12, Mexican and American, 40; Pueblo, 75, Opata, 129; Lower Colorado Yumans, 31, Cáhita, etc., 400. The Cáhita proper were bottom-land flood farmers on the Fuerte, Mayo, and Yaqui; the Yumans, bottom-land flood farmers on the Colorado. Why should the density of the former be a dozen times as great, and tribes run to 30,000 instead of 3000? Opata territory contains stretches of fertile river valley, but also endless series of enormous ridges. Why it should be more heavily populated than the Pueblo terrain, by a people no more and perhaps less complex culturally, is hard to see. Or, directly, why twice as many Opata, all of one nation, as Pueblos of four stocks? More broadly, I reckon in the American part of the Southwest area 103,000 natives on 9671 units of 100 square kilometers, with density 11; Sauer, in the Mexican part of the same area (less Peninsular California), 300,000 on 2556 units, density 117. With a much richer culture, as in central and southern Mexico, the disproportion might be plausible. But hardly within the same culture area; and with the Pueblos generally given the edge of superiority, even by contemporary Spaniards. After all, it was Cíbola, not the valley of Sonora, which fired the imagination of Coronado's expedition. Nor can the environment be called upon: Sonora and Chihuahua are little better land than Arizona and New Mexico.

---

[49] UC–IA no. 10, 1935.

I am maintaining not that I am right and Sauer wrong, but that if he is right all our figures for the American Southwest must be far too low; or else that somewhere near the present international boundary there was some unknown factor at work which multiplied population density by ten while environment and culture remained nearly uniform.

For Sauer's more southerly peoples—Acaxee and Xixime 30,000 each, Tahue 70,000, Totorame-Pinome 100,000, on 586 units, density 392—the figures are less shocking, since we are now in the area of higher culture, for which my guess of grand-average density is 292. I may easily have been too low: 400 or 500 may prove to be a truer figure; and southern Sinaloa and northern Nayarit are exceptionally fertile.

II. *Peninsular California.*—Meigs has made a calculation for part of Baja California, and estimates for the rest of the peninsula.[50] For eight Dominican missions he calculates[51] a tributary area of 5850 square miles, 6745 persons, and a density of 1.15, or more than my density for California as a whole: 133,000 people in 155,600 square miles. The Franciscan areas south and north of the Dominican bring the total up to 11,125 square miles and 10,884 people, exclusive of the slope toward the Gulf of California and the Colorado delta. The Jesuit area to the south must have held "more than 22,000."[52] It should have, being at least three times as extensive, and moister in the far south. In short, we have 33,000+ persons in 58,000− square miles, or a minimum square-mile density of 0.57, and a probable one of 0.7 or more, as against 0.85 for American California. Or, to revert to our 100-km.$^2$ units, and to ethnographic provinces instead of states, we have these densities:

| *Mexican California* | | *American California* | |
|---|---|---|---|
| Dominican area | 44 | California area | 43 |
| Dominican and Franciscan | 38 | Southern California area | 39 |
| Peninsula as a whole | 22+ | Lower Colorado, agricultural | 31 |
| | | Diegueño-Kamia | 18 |

Meigs does me the honor to accept my Upper California figures and sees no necessary clash between them and his own, because directly edible vegetation in the desert makes up for lack of game, and because Baja California has more coast line per area. I do see a clash, and believe the peninsula could not have fed more than a fraction of the people per areal unit which American California sustained. If Meigs's figures are right, mine are too low, and Merriam's 260,000 is more in order. The whole problem of California population needs to be reopened. Only, if we accept 260,000, one-quarter of all United States Indians were in California; and this seems unlikely enough. Shall we, then, assume that Mooney and practically all American anthropologists compute far too low?

---

[50] Peveril Meigs 3d, The Dominican Frontier of Lower California, UC–PG 7, 1935; esp. pp. 133–142.

[51] From baptisms, deaths, and less direct evidence.

[52] S. F. Cook, The Extent and Significance of Disease among the Indians of Baja California, UC–IA no. 12, p. 14, 1937, calculates 41,500 for the Jesuit area.

Whoever uses Spanish figures seems almost always to reach higher populations than modern ethnologists. The kernel of the problem lies here. Shall we pin more faith on contemporary Spanish opinions, or on those of professional ethnologists who often have not seen an Indian of the tribes they deal with?

III. *Farming population.*—My estimates for Southwestern farmers are probably too narrow. Both Gladys Reichard and W. W. Hill tell me that maize is the Navaho staple food, and that most Navahos farm. If so, the body of ethnologic literature on the Navaho stresses so important a fact surprisingly lightly. Most of the Western Apache, according to Goodwin, farmed, some of them considerably. The Eastern Apache apparently did not. The Yavapai and Walapai sometimes farmed when they could, but mostly could not. As one views historically the spread of agriculture, they may count as farmers; but when subsistence and population are considered, they do not. Addition of part of the Navaho and Apache to the agriculturists in table 10 would not materially swell the population total, but would appreciably increase its land area.

IV. *Hemispheric totals.*—Ángel Rosenblat in 1935 published a study on the history of native population in America since 1492.[53] He computes 13,385,000 in 1492, which decreased successively to 10,827,000 in 1570, 10,035,000 in 1650, 8,634,000 in 1825, but increased to 15,169,000 in 1930. His first total allocates thus:

| | | |
|---|---|---|
| North of the Rio Grande | 1,000,000 | |
| Mexico | 4,500,000 | |
| Central America | 800,000 | |
| Antilles | 300,000 | |
| *North America* | | 6,600,000 |
| Colombia | 850,000 | |
| Peru | 2,000,000 | |
| Bolivia | 800,000 | |
| Chile | 600,000 | |
| Brazil | 1,000,000 | |
| Remainder | 1,535,000 | |
| *South America* | | 6,785,000 |
| *Hemisphere* | | 13,385,000 |

This is the nearest estimate to my total of 8,400,000, and the distribution is rather similar.

V. *Methodological assumptions.*—Certain principles or assumptions enter tacitly or explicitly into most judgments of indigenous population size, and account for much of the large difference in findings. These assumptions are:

---

[53] El Desarollo de la Población Indígena de América, Tierra Firme (Madrid, 1935), vol. 1, no. 1, pp. 115–133, no. 2, pp. 117–148, no. 3, pp. 109–141. Innumerable valuable citations are compiled in the notes.

1. The vast majority of figures by contemporaries are too large. This fact will be generally admitted. The problem is to know when the exaggeration is slight and when it is unreasonable. In general, documentarians tend to cling to the more moderate figures given in the records, ethnologists to distrust them generically. Where Sauer shaves sixteenth- and seventeenth-century statements, I am likely to reject most of them outright.

2. Competent ethnologists with interest in concrete fact are able to correct the statements of contemporaries which relate to population size. This assumption may or may not be true, but is evidently made by American anthropologists who have concerned themselves with the subject. The basis of the assumption is not clear. It may be little more than professional distrust of lay opinion. But again, this may be sound.

3. Modern population is some index of original native population, at least under Latin-American rural conditions. Sauer uses this principle. The danger is to argue from what the native population might have been within the subsistence potentialities, to what it was. That the Mexican portion of the Southwest could have supported 300,000 people in 1492, according to what we know of farming methods then and now, is no proof that it did. There are almost always unknown factors at work. Mexico-Central America has almost quadrupled its population in 140 years and we do not know why. I have a conviction as a result of a lifetime of ethnological study that much of California could have fed twice as large a native population of the same culture, but have no idea why the population did not double to the margin.

4. Other things being equal, we infer a denser population from a richer ecology, or, among agriculturists, from a larger area of more fertile soil. But it is difficult to know when other factors are equal, or what constitutes richness or fertility where different cultures are concerned. As Sauer points out, to a farming people without iron or draft animals, friability of soil may be more important than productivity.

5. Also, other things being equal, a higher, richer, or more complex culture is a reasonable index of greater population density, within the same cultural area. Between different areas, the principle must be applied with much more caution.

All these assumptions find a certain justification in experience, but their limits are undetermined, and they are sometimes in conflict, sometimes in reënforcement of one another. Our "direct data," as available in the form of statements, are almost always low in reliability. Hence the quality of judgment primarily called for is a certain tact in discriminating the better from the inferior data and in balancing the several variables involved. The criteria of such discrimination are, however, very difficult to define, and for this reason awareness of the assumptions being used is important if our results are to attain greater probability.

For any larger area the dead reckoning or simple additive procedure which theoretically would be soundest is usually out of the question, because of the enormous discrepancies in the direct or primary estimate data. The best method probably begins with local areas on which the data seem unusually accurate, and then goes on by comparison, with constant consideration of variations in culture and terrain as well as extant estimates. Multiplication is to be avoided as much as possible, as a sort of averaging of variables. Rather the procedure is: If there were a million Indians north of the Rio Grande, do seven millions in the rest of the hemisphere seem too few, reasonable, or excessive? And can we allow a quarter of that million to California? If there begins to be strain in the compared results, what can we do in the way of going behind our starting point and raising the million north of Mexico? It is because Mooney was experienced in balancing and comparing, within his area, that most anthropologists will feel him a safer authority than Cortés or Las Casas, or registers of baptisms and deaths by priests knowing only some missions in one province.

I shall cheerfully admit a larger population for native America when one of two things has been achieved: either a distinctly better balanced picture than Mooney's which at the same time considerably raises his total for north of the Rio Grande; or convincing studies of specific districts in Latin America which, with maintenance of a reasonable balance within the whole of Latin America, compel a total there more than seven or eight times as great as Mooney's.

## XII. PHYSIOGRAPHIC AREAS

In theory, the "natural" areas of geology and physiography should perhaps have been considered long before this, as being the expression of those factors which underlie all others. Nevertheless, physiographic factors are more remote from culture than biotic factors; and it seems more useful to compare physiographic areas with known cultural ones than to work upward logically. After all, physiographic, climatic, vegetational, ethnic, and cultural classifications are the result of studies which mainly are independently empirical, and the endeavor of the present work is an examination of how far and why they correspond or fail to correspond, rather than to establish a hierarchy of dependence of one set of factors on another.

### United States

In 1916, largely as a result of work done by a committee of the Association of American Geographers, and in coöperation with the United States Geological Survey, N. M. Fenneman published Physiographic Divisions of the United States, reissued with revisions in 1928, which has become standard in its field.[1] It is worth while to compare his groupings with the ethnic and cultural ones advanced here.

The Fenneman classification is based on the W. M. Davis concept of three principal factors in topography, namely: *structure* in the widest sense, *process* of erosive agency, and *stage* of erosive destruction attained. The classification of North America is first into eight *major divisions,* all of them represented in the United States and six of them in Canada. These divide in turn into *provinces,* of which twenty-five lie wholly or partly in the United States. These in turn subdivide into *sections.* The outlines of the map accompanying the Fenneman classification are reproduced in the present paper as map 7, redrawn so as to coincide with the base underlying my vegetational, tribal, and cultural maps. The twenty-five physiographic provinces will now be reviewed with respect to such agreement as they show or fail to show to native ethnic and cultural grouping. It may be mentioned in preface that the eight major divisions are the Laurentian Upland (Canadian or Pre-Cambrian Shield), the Atlantic Plain, the Appalachian Highlands, the Interior Plains, the Interior Highlands, the Rocky Mountain System, the Intermontane Plateaus, the Pacific Mountain System.

#### A. LAURENTIAN HIGHLAND (PRE-CAMBRIAN SHIELD)

1, Superior Upland: that part of the Laurentian Highland (itself part of the great Canadian Pre-Cambrian Shield) which surrounds Lake Superior and stretches eastward, north of the other Great Lakes, to the St. Lawrence in the region of the Adirondacks. It is a highly glaciated region with poor drainage, streams being few and lakes numerous. This province coincides fairly approximately with the Ojibwa-Ottawa-Algonkin or Northern Great Lakes cultural area.

---

[1] Annals Assoc. Am. Geogr., 6:19–98, 1916; 18:261–353, 1928.

### B. ATLANTIC COAST PLAIN

2, Continental Shelf: submerged.

3, Coastal Plain: from Mexico continuously to New York Harbor, plus Long Island and Cape Cod. The inland boundary is formed by the inner edge of the Cretaceous, or, in their absence, Tertiary, rocks; in Texas, by the Balcones Fault near Austin. In the north, this edge coincides with the fall line of rapids. The sections recognized are six:

The Embayed or Depressed section extends south to Cape Lookout and the Neuse River. This coincides almost exactly with Algonkin territory.

The Sea Island section reaches south to the St. Johns River. This was wholly Siouan and Muskogian, though both groups extended up into the Piedmont also.

The Floridian peninsula is defined by a line drawn somewhat arbitrarily from the mouth of the St. Johns to the south end of Apalachee Bay. This is a little smaller than the combined Timucua and Calusa areas. The separateness of these two cultural areas from each other thus is not due to any topographic feature, but rather to a vegetational difference, and above all, probably, to the greater remoteness of the South Florida culture from the centers of the Southeastern culture on which it seems to depend.

The East Gulf Coastal Plain extends from central Georgia to Lake Pontchartrain, and inland to the mouth of the Ohio. This was solid Muskogian territory.

The Mississippi Alluvial Plain reaches from the Ohio to the Mississippi's mouth. It is narrow on the east of the Mississippi except where it takes in the course of the Yazoo; wider on the west. This is the region of the Natchez, Tunica, Chitimacha; of a number of small Muskogian tribes; of a Siouan remnant, the Ofo; and of a larger Siouan tribe, the Arkansas-Quapaw, whose near speech relatives lived north and west. The Southeast Climax falls characteristically in this Alluvial section, which, however, is much larger, as if the Climax had shrunk southward within it. But some of the finest archaeological remains, especially of pottery, occur farther north in the Mississippi Alluvium, especially in Arkansas and the southeast corner of Missouri.

The West Gulf Coast plain about coincides with the Red River or Caddoan and the South Texas or Northwest Gulf Coast culture areas. Like the latter, it crosses the Rio Grande into Mexico. The eastern boundary against the Mississippi Alluvium is not far from the Chitimacha-Atakapa or Southeast-South Texas cultural line. But the Red River area is of course culturally quite distinct from the nonagricultural South Texas one. It is expectable that even though cultural areas rest in part on physiographic ones, several of one should at times be included in one of the other.

### C. APPALACHIAN HIGHLANDS

The Appalachian Highlands major division is physiographically the most complex, segregating into no fewer than 7 provinces and 22 sections. Several of these provinces can be virtually eliminated from present consideration as of thin occupation and little cultural significance. But even the others fail to coincide well with any culture grouping. And the major division as a unit, as well as most of the many small sections, seems to mean little ethnically or culturally. After all, the highland systems which constitute the backbone of the division and define its limits offered little but drawbacks to native life, in comparison with the lowlands on both sides, except along some margins and in a few interior localities.

4, the Piedmont province, stretches from the Hudson Palisades to central Alabama. Its northern part is quite irregularly divided between a Piedmont Upland and Piedmont Lowlands; south of 38°, where it also doubles or trebles in width, the Piedmont is all "Lowlands." At latitude 38° the inner edge of the Piedmont against the Blue Ridge lies at about 800 feet elevation; from southern Virginia to Georgia, at 1500. This southern part of the Piedmont was Siouan and Muskogian, plus Yuchi and Shawnee. The Siouans and Muskogians had kinsmen in the Coastal Plain below them; the differences in regard to these seem to have been slight. In Georgia and Alabama the line between Piedmont and Plain may have been that distinguishing the Upper from the Lower Creeks, so far as this distinction may not prove to have been largely a historical or linguistic one.

5, the Blue Ridge, and 6, the Valley and Ridge province, are both narrow. The former extends from northern Georgia to southwestern Pennsylvania; the latter, from central Alabama up the Hudson to abreast of Lake George in New York, where its depression runs into that of the St. Lawrence Valley province through the Champlain section of this. Except for the Cherokee in and about the southern end of the Blue Ridge system, there seems to have been no important native people specifically associated with either physiographic area.

7, the St. Lawrence Valley, is of course mainly Canadian, but its Champlain section lies largely in the United States. The whole province was Algonkin in the period of settlement, with part of the Iroquoian Huron as a northeasterly and perhaps temporary outlier just before.

8, the Appalachian Plateaus province, stretches west of the preceding ones from northern Alabama to northern New York, including the Catskills but excluding the Adirondacks, and in its wider part in West Virginia, Ohio, Pennsylvania, and New York reaching nearly to Lake Erie. It is essentially a dissected plateau. The sections recognized are Mohawk, Catskill, Southern New York, Allegheny Mountains, Kanawha, Cumberland Plateau, Cumberland Mountains. This also is a low-level area, so far as native utilization is concerned. The Alabama-Tennessee portion was divided between rather than utilized by Cherokee, Creek, and Chickasaw. The middle portion, in Kentucky, West Virginia, and Ohio, constituted the largest populational vacuum of North America, at the time of discovery, except for the far north of the continent. Some tracts within this portion were well populated in Mound Builder times; but on the whole, mounds and remains are fewer than to the north, west, and south. In the northern portion, the Erie and Iroquois sat astride the boundary of the province against the Great Lakes. As the other northern Iroquoians had characteristic lower Great Lakes habitats, the Erie and Iroquois may be assumed to have participated in this, plus a certain spill southward into the Appalachian Plateaus province.

It should be borne in mind that this plateau province on the whole faces west, not east. Except for most of its New York and part of its Pennsylvania tracts, it drains into the Ohio River.

9, the New England province, whose separate recognition is admittedly based in large part on convenience, is a northeasterly extension of the foregoing Appalachian provinces except the Plateaus, differing chiefly in having been glaciated. It takes in all of New England except Cape Cod and the Lake Champlain border of Vermont; includes a strip stretching across New York and New Jersey to mid-eastern Pennsylvania; and extends northward into Quebec and New Brunswick. Five sections are recognized within the United States: Seaboard Lowland; New England Upland, including the Connecticut shore; White Mountain, including much of western Maine; Green Mountain; and Taconic, along part of the western border. These five sections do not correspond with anything cultural. The line separating the southern from the northern New England Indians—the Middle and North Atlantic Slope culture areas—cuts squarely across four of the topographic sections. The only ethnic concordance is the fact that the whole of the New England province, including its Canadian parts, was Algonkin. But in view of the vast extent of the Algonkin family, it is expectable on theoretical probability that it should cover several physiographic provinces each without a break.

10, the Adirondack province, which shows about as much relation to the Laurentian Upland as to the Appalachian Highlands, was essentially unoccupied in native times.

### D. INTERIOR PLAINS

The Interior Plains are a vast division reaching from Lake Ontario to the foot of the Rockies, across the Rio Grande, and largely into Canada. Three provinces are recognized: Interior Low Plateaus; Central Lowland; and Great Plains.

11, the Interior Low Plateaus, lies in central Tennessee and Kentucky, with some overlap across the Ohio and probably into Alabama. Archaeologically the region shows a noticeable richness, as part of the prehistoric Ohio Valley culture. At the discovery it was thinly populated, chiefly by one of the Shawnee branches. The four sections of the province need not, therefore, be further considered here.

12, the Central Lowland province, extends west, though rather irregularly, to about the famous hundredth meridian line, and farther west in Canada. The western boundary against the Great Plains is marked by an escarpment line above which the surface is actively dissecting, whereas below it the streams are generally near their local base level and therefore inactive. From South Dakota across Nebraska into Kansas, however, this line against the Plains is uncertain, and by some authorities is put farther west. Except along this doubtful front, which almost touches meridian 97°, the Central Lowland-

Great Plains boundary is nearly everywhere at or west of longitude 99°, and often beyond 100°.[2]

The sections recognized are: an Eastern Lake section, surrounding the Great Lakes except Superior; a Western Lake section, or district of small lakes, covering most of Minnesota and adjacent parts of the Dakotas and Iowa; the Wisconsin Driftless section between the last two, in southwest Wisconsin; the Till Plains, or valley of the Ohio north of the river, to the Mississippi; the Dissected Till Plains, west of the Mississippi; the Osage Plains, from the Kansas River south to Fort Worth and Abilene,—in other words, to the upper Brazos and Colorado.

Vegetation is nonconformable to these sections of the Central Lowland province. The grassland-forest line cuts across three or four of the sectional boundaries.

Culturally the sections were of rather different homogeneity.

The Eastern or Great Lakes section consists of three districts; that surrounding the lower Lakes; the southern peninsula of Michigan, which lies between the upper and lower Lakes; and the area west of Lake Michigan. The first of these was the homogeneous North Iroquoian area. The second was rather indeterminate, and has been reckoned, hesitantly, with the Ohio Valley culture area. In the historic period it seems to have fallen under some Northern influence, and before that may have had relations with the area west of Lake Michigan. This third district was the home of the historic Sauk, Fox, Kickapoo, Winnebago, and Menomini, and therefore a recognized cultural unit, the Wisconsin or Wild Rice area. This is shown larger on the cultural map than on the physiographic one, but the main seats of the tribes in question were precisely within the physiographic section as there delimited. The lakeless west Wisconsin Driftless section seems to have been much less utilized. The lakes, and with them the wild rice, resume in the Western Lake section of Minnesota, as well as in the Superior (Laurentian) Upland of northern Wisconsin. These two areas, together with that immediately west of Lake Michigan, constitute the main wild-rice district. This was larger than the territory of the five tribes mentioned. Evidently they lived where an easy combination of wild-rice gathering and maize agriculture gave them an optimum subsistence. This seems to have been the essential basis of the Wisconsin or Wild Rice culture area, which might more accurately have been named the "West of Lake Michigan" area.

The Western Lake section of the upper Mississippi, Minnesota, James, and Red rivers was mainly Dakota, with Ojibwa pushing in as the western Dakota occupied the Missouri and country beyond.

The Till Plains section coincides with a somewhat shrunk Illinois-Ohio Valley culture area.

The Dissected Till Plains held the more northerly of the Central Siouan tribes, Chiwere and Dhegiha.

---

[2] On the basis of vegetation (Shantz-Zon, map 4), the bulge in the line between the two adjacent provinces is reversed. The Prairie-Plains or Tall-Short Grass boundary in general follows meridian 99° or 100°, but in Nebraska swings west almost to 103°.

In the Osage Plains were some of the more southerly Central Siouans, and beyond them Caddoans, Kiowa, and even Comanche. Culturally as well as ethnically this section was diversified.

13, the Great Plains province, is essentially a dissecting plateau, generally marked off against the Rocky Mountains by the fact that its Mesozoic or younger strata are replaced by Palaeozoic or still older rocks in the mountain system. The range of the Great Plains is from Mexico far into Canada. As the eastern boundary is drawn, it includes the three Village tribes and the Pawnee; and excludes the Santee and Yankton Dakota and all Siouans south of the Dakota, also part of Kiowa territory. Culturally the fit would be much better if in the latitude of Nebraska the eastern Plains border bowed in instead of out, for which there is some physiographic authority. The Pawnee would thereby be transferred to the Central Lowland province, which would place them with the Prairie-Woodland tribes.

In the south, the Great Plains province is narrowed on the Fenneman-Geological Survey map to the Oklahoma and Texas panhandles and eastern New Mexico, by the southwestward protrusion of the Osage Plains section of the Central Lowland province to include the upper Red and Brazos drainages. Still farther south, the Great Plains are swung east to meet the Coastal Plain at the Balcones Fault near Austin. This makes the southern part of the physiographic Great Plains coincide rather well with eastern Apache distribution; certainly better than with that of the accepted Plains tribes of the nineteenth century.

No fewer than ten sections of the Great Plains province are recognized: Missouri Plateau Glaciated, the same Unglaciated, Black Hills, High Plains, Plains Border, Colorado Piedmont, Raton, Pecos Valley, Edwards Plateau, and Central Texas. The last four of these, with part of the High Plains, correspond to somewhat more than the cultural Southern Plains, as defined in the present work; the others, to the Northern Plains. The Glaciated and Unglaciated Missouri Plateau sections held respectively the Blackfoot and Atsina, and the Crow, Northern Cheyenne, and Teton Dakota.

### E. INTERIOR HIGHLANDS

This small major division comprises the 14, Ozark Plateaus, and 15, Ouachita, provinces of parts of Missouri, Arkansas, and Oklahoma. It belonged to Siouans and Caddoans, and was of secondary importance in native life populationally, culturally, and in the main archaeologically. This was, no doubt, because of its altitude as against that of all neighboring districts. The same factor kept it timbered.

### F. ROCKY MOUNTAIN SYSTEM

Like the other elevated major divisions, the Rocky Mountains constituted chiefly fringes, hinterlands, or barriers under native settlement. There was no population pressure, in our sense, to force active utilization of all land; no mining, stock raising, or lumbering industries to draw parts of a population from the lowlands into the mountains.

The Rocky Mountain System runs well into Canada, but not all the way across the United States. It terminates at Santa Fe. It is unrepresented in southern New Mexico and in Mexico. The recognized grouping is under Southern, Middle, and Northern provinces, plus a Wyoming Basin nearly encircled by the first two.

16, the Southern Rocky Mountains province, extends from Las Vegas, Glorieta, and Santa Fe to the North Platte in Wyoming, but lies predominantly in Colorado, which the mountains approximately bisect. They served as a barrier between the Intermountain Ute and Plains tribes like the Arapaho. In the south there was a Pueblo area in the Rio Grande Valley, and some Apache occupation.

17, the Wyoming Basin, consists of the drainage of the heads of the Green, North Platte, and Big Horn rivers. It is a structural part of the Rocky Mountain System, whose lowered ranges here lie largely buried under post-Palaeozoic deposits. But geographically the Wyoming Basin is a plateau, definitely open to the Great Plains on the northeast and practically so to the Colorado Plateaus on the southwest. It was occupied by Shoshone, part of whom, the Wind River group, assimilated a considerable overlay of Plains culture during the last century or so of their independence.

18, the Middle Rocky Mountains province, extends from the Uintas to the Yellowstone River near Livingston. So far as occupied, it was Shoshonean, except that the Crow from the Plains held the Big Horn Range on the northeastern front of the province.

19, the Northern Rocky Mountains province, as defined, lies astride the Bitterroots, about equally in Montana and Idaho, with some extension into northeast Washington and, presumably, for some distance into Canada.[3] This was a genuine home, though not a densely settled one, for a number of tribes, Salish, Sahaptin, and Shoshonean. The reason is the several large intermountain valleys which it includes. Culturally it contains the United States portion of the Upper Columbia area, part of the Middle Columbia, and some of the Snake-Salmon area which has been tentatively linked with the Great Basin.

### G. INTERMONTANE PLATEAUS

The Intermontane Plateaus major division corresponds, in its United States portion, closely to the Intermountain and Southwest areas of culture. It reaches from Alaska into Mexico—continuously, if a small area in northeastern Washington is transferred from the Rocky Mountain to the Intermontane division, as there is some warrant for doing.[4] Three provinces are recognized: Columbia Plateaus, Colorado Plateaus, and Basin and Range. The last is the largest.

20, the Columbia Plateaus province, defined as a plateau surface on a substratum of lava, is made to reach from east of the Snake to include The Dalles and the Deschutes River on the west, and from the bend of the Columbia in latitude 48°, south and southeast far enough to take in nearly all the Snake drainage; plus probably the interior drainage of central Oregon (Harney Lake) south to 43°. Most of the southern boundary against the Basin and Range province is as yet quite indeterminate. It will be recalled that a similar indeterminateness holds for the cultural line between the Middle Columbia and Great Basin cultural areas; though as provisionally drawn this line made most of the Snake drainage a subarea of the Basin.

---

[3] The Canadian classification (see below, and map 7) does not conform. It makes the south Canadian Rocky Mountain system narrow, confined to the "Rockies" in popular local usage; and it puts into the Intermontane Plateau division the Selkirk, Purcell, and Columbia mountains, which lie, just across the international boundary, adjacent to the western part of the United States Northern Rocky Mountain province. The Canadian classification gives a simpler and sharper ethnic fit.

[4] Fenneman, 336, n. 43, 1928.

The peoples of the Columbia Plateaus are the same as those of the Northern Rocky Mountains province: Salish, Sahaptin, and Shoshonean, but, at least in the historic period, in reverse order of importance, the Salish now predominating.

21, the Colorado Plateaus province, occupies the larger part of the basin of the Colorado River. It is characterized by high, horizontal, strong strata, locally covered by lava flows, and with deep dissection. It is continuous with the Wyoming Basin in the Rocky Mountain System, whose characteristics are similar, and half of which is also in the drainage of the Colorado. The Colorado Plateaus province lies about the four-states corner, but with about twice as much of it in Utah and Arizona as in Colorado and New Mexico. The New Mexican boundary is the least certain.

Part of this physiographic province belongs culturally with the Great Basin, the other half with the Southwest. The San Juan drainage is often looked upon as the original home of the specific Pueblo culture. As this, later on, shrank, the evacuated area passed ultimately into Athabascan possession. The extreme southwest edge of the province is now Yuman. The full half of the province north of the Grand Canyon and the San Juan River is now Shoshonean—Ute and Southern Paiute, to be specific—and most of it may have been so for a very long period.

All in all, the accord of this province to anything cultural or historic is poor. The boundary between two well-differentiated cultures, the Pueblo and the Great Basin, has at all known periods cut across the province, but has failed to maintain stability. Substitution of the larger concept of Southwest culture for the specific one of Pueblo does not clear the picture, because of the dominance of Pueblo within Southwestern culture, or at least the half of Southwestern culture here involved. The analogous vegetational relation of the two cultural areas has been discussed previously. It would seem that the historic situation is the result of interaction between a cultural and an environmental factor: the building of the Pueblo-Southwestern culture around maize agriculture, and the locally and perhaps temporally varying amount of rainfall during the summer growing season of maize. The whole region is so arid that permanently dependable farming is generally only just within the threshold of possibility. Even a slight local or periodic variation in the summer rainfall, insufficient to change materially the native plant cover, might therefore suffice to push the barely held frontier of the farming culture forward or back two or three hundred miles. Because of poising on the edge of feasibility, Pueblo farming and therefore culture were far more dependent on a single factor of climate than on fundamental physiographic configuration or general climatic type as reflected in natural vegetation. At the same time, just because the balance was so delicate, a purely cultural or historic factor developing in the Pueblo mode of life might be sufficient to cause it to fail, and to abandon territory, even where summer rains were or remained sufficient.

In this way we seem best to have explained the fact that both when it was most widespread and today in its much contracted range, so highly specific a culture as the Pueblo one has remained established in three distinct physiographic provinces: Rocky Mountain, Colorado Plateaus, and Basin and Range; and in an even greater variety of natural vegetations.

22, the Basin and Range province, formerly also called Basin Range, is an extensive one. It takes in not only the Great Basin proper, but also the relatively low country west and south of the higher Colorado Plateaus, continues into Mexico over a front reaching from the middle of the California-Mexico to the middle of the Texas-Mexico boundary, and includes large areas in Mexico. The United States sections of the province are: Great Basin,[5] Sonoran Desert, Salton Trough, Mexican Highland, and Sacramento (Mountains). The typical traits are separate, more or less parallel ranges, mostly consisting of fault blocks, and intervening plains made up mainly of unconsolidated deposits of detritus from the ranges. These deposits are in large part due to ineffective drainage, and this in turn partly to arid climate. In the Great Basin and Mexican Highlands section, the ranges constitute half of the total area; in the Sonoran Desert and Salton Trough, not over a fifth. The two latter areas also average lower in altitude, in both basins and ranges.

Much of this province presents good ethnic and cultural fits; probably because climate as well as geologic structure has had a hand in the production of its features. In Nevada and California, the population was prevailingly Shoshonean, but with Klamath-Modoc and Achomawi-Atsugewi in the Klamath Lakes-Pit River subarea of the Basin on the northwest, and Yuman tribes in the Lower Colorado subarea of the Southwest in the south. The Shoshoneans, however, belong to three groups: Mono-Bannock, Shoshone proper, and Ute-Chemehuevi, whose distribution appears to be related to no physiographic features internal to the Basin, and passes well outside of it.

In Arizona and New Mexico, the Sonoran Desert section belongs wholly and the Mexican Highland section partly (in its western part) to the Sonora-Gila-Yuman half of the cultural Southwest. Through Arizona the line between this and the Pueblo half of the Southwest conforms approximately but not closely to the boundary between Basin and Range and Colorado Plateaus. The cultural line runs somewhat nearer vertically on the map. The New Mexican areas of Basin and Range, and an adjacent district of Chihuahua, were once held largely by true Pueblo Indians, and even in the historic period belonged to the Puebloid Southwest. The remarks made on Pueblo culture with reference to the Colorado Plateaus apply here also. Further, this border territory of the

---

[5] This Great Basin section (like the Great Basin culture area) is not delimited by landlocked drainage although most of its drainage is of that kind (Fenneman, 343–345).

United States can obviously not be understood without knowledge of the contiguous areas of Mexico; and this is still deficient, besides being somewhat differently classified.[6]

### H. PACIFIC MOUNTAIN SYSTEM

The Pacific Mountain division contains two provinces: the Sierra-Cascade Mountains and the Pacific Border, plus the end of a third, Lower California. So far as human utilization is concerned, the Border province is much the more important, because it contains large valleys and its mountains are lower.

23, the Sierra-Cascades province, has no unity of geologic history, but nevertheless forms a continuous and high wall a thousand miles long. This wall begins only a few miles beyond the international boundary, being superseded there by the interior plateau[7] of British Columbia. The Northern section of the Sierra-Cascades, extending to about as far south as abreast of Seattle, is without volcanic cover. The Middle Cascade section continues to Klamath Lake. The range here is partly a result of uplift and partly of volcanic cover, the latter increasing southward. The Columbia River has cut through this section. From Klamath Lake to 40° is the Southern Cascade section, an area of indefinite outline consisting of volcanic cones and plateaus. The Klamath and Pit flow across it. It will be noted that most of this section lies in California, not Oregon, and is popularly regarded as part of the Sierra Nevada rather than of the Cascades. Its southernmost part, more or less coinciding with Yana territory, slopes into the Great Valley of California. Beyond is the Sierra Nevada section. This is reckoned as extending westward to where the older rocks of the range give way to the Quaternary deposits of the Great Valley. This section thus contains the territory of the Foothill Maidu, Nisenan, Miwok, and Yokuts, and, higher up, of the Mountain Maidu, Washo (partly), and Western ("Mountain") Mono; besides a few small Shoshonean groups at the westerly-curving southern tip of the range. This was a fairly numerous population; but culturally somewhat backward as against their relatives on the Great Valley floor.

24, the Pacific Border province, contains two valley sections, the Puget and California troughs, and five mountain sections, the Olympic Mountains, Oregon Coast Range, Klamath Mountains, California Coast Ranges, and Los Angeles sections, of which all but the middle one contain fair amounts of valley or plain. This was, in native times, the most densely populated area of its size north of central Mexico. Ethnically and culturally, the sections of this province were more important than many whole provinces elsewhere.

The Puget Trough is 400 miles long in the United States, and extends far north between the mainland and islands of British Columbia. Its southern limit is put at Eugene in the Willamette Valley. It thus includes the Willamette and Puget Sound "backwash" areas of the Northwest Coast, as well as the Gulf of Georgia and probably much of the Central Maritime North areas.

---

[6] See discussion of Mexican physiographic areas below.

[7] Thus Fenneman; according to Canadian authority, by the main or mainland Coast Range—see below. The Canadian view seems the obviously reasonable one; the American definition probably rests on technical grounds.

The Olympic Mountains were of course uninhabited in their main mass. On their west side lies a dissected coastal plain ten to twenty miles wide which may prove to constitute a subsection. This plain and ocean frontage were the home of the Makah, Quileute, and Quinault, whom I have reckoned, with the Nutka of western Vancouver Island, as constituting the Central Maritime South subarea of Northwest Coast culture.

The Oregon Coast Range section is a rangelike dissected plateau extending from the Chehalis River, south of the Olympics in Washington, to the Klamath Mountains in latitude 43° in Oregon. There is again a Coastal Plain subsection or district. This area coincides rather neatly with my Lower Columbia cultural area, except that I extend this up the Columbia through the Cascades to The Dalles, and tentatively set the southern limit a little farther north, at the low Umpqua Mountains.

The Klamath Mountains section has strong, closely folded and metamorphosed rocks, older than the respectively Tertiary and post-Palaeozoic ones of the Oregon and California coast ranges.[8] Inland it is bordered by the Southern and Middle Cascades. The Umpqua, Rogue, and Klamath flow down through it from the Cascades province. Only the Klamath actually heads beyond the Cascades. This puts it, though a smaller stream, in a class with the Columbia and Pit-Sacramento, which also rise inland of the Cascades and drain through them into the adjoining coast sections. The Klamath Mountains section appears to have no coastal plain like that of the two preceding areas. The southern boundary of the section takes in the Trinity as well as the Klamath, and the upper Sacramento and McCloud. Otherwise, this section corresponds nicely with the Lower Klamath ("NW California-SW Oregon") subarea, the southernmost division of the long Northwest Coast culture area. The boundary of this I run northeast from Cape Mendocino, instead of southeastward from beyond Trinidad Head as in the physiographic section. It is clear that the parallel ridges which reach the coast between these two headlands are of California Coast Range type; but the culture in their lower intervening valleys is still more Northwestern than Californian. Geology and culture simply disagree in this corner. Inland, too, the section differs somewhat from the culture area; but I include the Shasta of the middle Klamath and Wintu of the upper Trinity, along with the Athabascans of the Eel River coast ranges, in a California-Northwest Transition area.

The California Trough, popularly the Great Valley of California, runs from Redding to Bakersfield, its whole length lying between the Sierra Nevada and Coast Ranges. It is somewhat longer than the United States portion of the Puget Trough, with which it lies in line at the foot of the Sierra-Cascades system but with two hundred miles of Klamath Mountains separating them. The valley floor is Quaternary sediments. The tribes included are the Valley Wintun-Patwin, Maidu-Nisenan, Miwok, and Yokuts—all Penutians—as distinguished, each, from the foothill divisions of the same groups on the east or west. Each of the several languages changes only dialectically in the passage from valley floor to hills, and there is no abrupt change of customs, but the intensity or complexity of culture is definitely greater in the valley. This is as neat an accord with physiography as could be expected at best, and would hardly be possible except among populations so stable and sessile as these.

---

[8] Historically the Klamath Mountains are considered by some authorities to be related to the Sierra Nevada and not to the Oregon and California coast ranges, just as the Sierra is related to the Klamath Mountains and not to the Cascades.

The California Coast Ranges extend from the Klamath Mountains south to the east-west ranges of the Santa Barbara region. The section is divided into two nearly equal parts by San Francisco Bay. The northern half contained the Pomo and Yuki and certain Wintun, Miwok, and Athabascan groups; the southern, the Costano, Esselen, and Salinan. These two bodies constituted definite subgroups of the California culture area. Within the northern half, the Pomo formed a climax, which was linked with, though also distinct from, a similar climax on the lower Sacramento in the California Trough section. These minor cultural differentiations are associated with details of local topography. They are superimposed on the general cultural distributions much as the local topography is on the larger physiographic section or province.

The Los Angeles section includes the east-west-trending San Rafael, San Gabriel, and San Bernardino ranges, and the southeast-trending, granitic San Jacinto Range. South of the former series is lowland, part of which is coastal plain—the first of moment since latitude 43°. This physiographic section agrees quite closely with the Southern California subculture area of the Southwest. The groups in it were the Chumash, Gabrielino, Luiseño-Cahuilla, and part of the Serrano.

It will be seen that every recognized section of the Pacific Border province finds definite correspondences, and sometimes surprisingly close ones, in the cultural groupings which have been made quite independently. For no other province of equal extent does this hold to equal degree.

25, the Lower California province, is a granitic, west-sloping upland with a sharp scarp on the east. Within the United States, it is represented only by an area about coterminous with San Diego County, which in turn was the habitat of the Yuman Diegueño, who, although formerly classed as within the Southern California culture area, have in the present work been set off as belonging more fundamentally with the natives of Baja California.

## CANADA

For Canada there is an outline of physical areas by Dowling.[9] This tallies with the Fenneman Geological Survey map only approximately. Dowling emphasizes geological history; Fenneman, rather the present results of such history. Both treatments seem nationalistically colored, so far as they tend to accept areas which have acquired semipopular recognition in their respective countries. Dowling is less interested in the finer subdivisions or sections. The major divisions of the two classifications, however, correspond wholly in principle, and the provinces to an appreciable degree—indeed, the boundaries sometimes meet at the international line. I have therefore entered Dowling's map on the same base as Fenneman's (map 7), slightly changing the coördination and subordination of some of his areas to conform to the more elaborate United States scheme,[10] and adding in dotted lines the estimated boundaries of some of his areas which he mentions but does not delimit on his map. Such differences as remain are for physiographers to resolve.

---

[9] D. B. Dowling, An Outline of the Physical Geography of Canada, 13th Rept. Geogr. Board of Canada, pp. 1–17, 1915.

### A. CANADIAN OR PRE-CAMBRIAN SHIELD

This Pre-Cambrian continent or Archaean peneplain takes in more than half the Dominion. The average elevation is not far from 1000 feet. The center, including Hudson Bay, is depressed. The whole area is profoundly glaciated, hummocky, with innumerable lakes, and with the present drainage not cut but largely following preëxisting depressions. Physiographic provinces have scarcely been recognized, except for two or three ill-defined border districts:

1, the Main Shield.

2, Laurentian Highland, the southern edge north of the St. Lawrence and Great Lakes. The Superior Upland of the United States is a western portion.

3, Clay Belt, on the southwest edge of Hudson Bay.

The Canadian Pre-Cambrian Shield was occupied by backward Algonkins in the east and south: Naskapi, Montagnais, Cree (part); by Athabascans in the northwest: Caribou-eater, Chipewyan (part), and Yellowknife; and by Eskimo. The Laurentian Highland coincides fairly well with the Algonkin-Ottawa-Ojibwa Northern Great Lakes area. The Clay Belt is wholly Cree.

### B. ATLANTIC COAST PLAIN

This physiographic area is not recognized in Canada.

### C. APPALACHIAN HIGHLANDS

This system is represented in Nova Scotia, New Brunswick, and adjacent Quebec by a continuation of the New England section, the regular ridge-and-valley system of south of the Hudson being lacking. The provinces recognized are:

1, Quebec-New Brunswick-Gaspé Peninsula Highlands, a continuation of the Green Mountains (U. S. 9d).[11]

2, Highlands of Central and Southern New Brunswick, regarded as a continuation of the White Mountains (U. S. 9c).[12]

3, Nova Scotia Highland.

4, Maritime Lowlands of Eastern New Brunswick and Nova Scotia.

5, the St. Lawrence River Plain, is united by Dowling with the Ontario Lowlands into the St. Lawrence Lowlands. The Ontario Lowlands are reckoned in the United States as part of the Eastern Lake section (a) of the Central Lowland province (12) of the Interior Plains (D); and the St. Lawrence Valley (including the Champlain Valley) is made a province (7)—a continuation of the more southerly Valley-and-Ridge province (6)—of the Appalachian Highlands System (C). For the sake of consistency and geographic continuity, the American scheme is followed here.

---

[10] The chief differences are that Dowling treats three areas whose extensions in the United States are recognized as separate major divisions (Rocky Mountain System, Interior System of Plateaus and Mountains, and Coast Range) as provinces of one "Cordilleran Region," and two parts of the Interior Plains (St. Lawrence Lowlands and Great Plains) as if they were separate major divisions. These differences are purely taxonomic.

[11] And 9b, New England Upland.

[12] Rather 9b, according to Fenneman, who terminates the White Mountain section in central Maine, but carries 9b on into New Brunswick.

All of the Canadian Appalachian division was Algonkin and in the North Atlantic Slope culture area. However, the Canadian reckoning of the St. Lawrence River Plain with Ontario agrees with the occupation of both areas by the Huron before 1600.

### D. INTERIOR PLAINS

The divisions integrate only partly with those recognized in the United States. They seem better founded in practical geography; the latter are perhaps more technically correct.

1a, Eastern Ontario Basin, and 1b, Ontario Peninsula (between Lakes Huron and Erie, sloping westward from the Niagara escarpment), are part of U. S. 12a, Central Lowlands province, Eastern Lake section. Reckoned in Canada with the St. Lawrence Lowlands. Iroquoian.

The rest of the Interior Plains are grouped together in Canada as forming "the Great Plains," a term which in American geologic and botanical usage is restricted to the western part of the area. The Canadian "Great Plains" consist of short-grass plains, tall-grass prairie, savanna, and forest in the north.

2, Manitoba Lowlands, First Prairie Steppe. U. S. 12b, Central Lowland province, Western Lake section. Swampy and Plains Cree.

3, Mackenzie Lowlands; grouped with 2. An Eastern (a) and Western (b) division are recognized, divided by the Franklin Mountains (=c ? or part of F ?). All Athabascan: Slave, Dogrib, Hare.

4a, Cretaceous Plateau, Lower; Second Prairie Steppe: U. S. 12.

4b, Cretaceous Plateau, Upper; Third Prairie Steppe: U. S. 13.

4c, Foothills (of the Rockies).

5, Northern Great Plains, where 4a and 4b are no longer distinguishable.

Nomenclature here differs from the American, the United States equivalent of the Second Prairie Steppe being considered Lowland (12, Prairie); of the Third, Great Plains (13); and no Foothill section being set off, except in Colorado. The line between the Second and Third Steppes seems to form the boundary between the Plains Cree (and Assiniboin ?) and the Blackfoot. Area 5 held only Athabascans; western Chipewyan, Sekani, Beaver, perhaps Sarsi and southerly Etchao-tine.

### E. INTERIOR HIGHLANDS

This system is lacking in Canada, of course.

### F. ROCKY MOUNTAIN SYSTEM

This is assumed to be bordered on the west, against the Interior Plateaus, by the Rocky Mountain Trench, a depression extending, supposedly continuously, from Flathead Lake to Alaska, and used for parts of their courses by the Kootenay, Columbia, Fraser, Parsnip, Dease, tributaries of the Liard, Pelly, Steward, and Yukon rivers. The divisions are:

1, the Rocky Mountains, a rather narrow belt of several ranges, those of the eastern side being younger than those of the western, and of different structure. This province does not conform to the American Northern Rocky Mountains province (19). The latter is much broader, and passes into the Selkirk and Columbia mountains, which in Canada are reckoned as provinces of the

Interior Plateau. This is a difference which must be left to the geologists of the two countries to come to agreement on.

2, the Mackenzie Mountains, from the Liard north, are a much broader mass, but also divisible into (a) western and (b) younger eastern series of ranges, of which last the Franklin Mountains (c ?) across the Mackenzie River are perhaps part. The line of division between (a) and (b) seems to lie east of the watershed. This area holds most of the Athabascan Daho-tine, Etchao-tine, and Abbato-tine; also the Atai-kutchin.

3, the Richardson Mountains.

### G. INTERMONTANE PLATEAUS

The Interior System of Plateaus and Mountains is equally marked in Canada and the United States, but is somewhat less broad in the former country. The continuity of the American and Canadian Plateau systems is probably greater in fact than in the technical nomenclature and on the map, since the American Northern Rocky Mountain (19) province is carried west along the international boundary to meet the northern section (23a) of the Sierra-Cascades province. The Canadian Intermountain Plateau division comprises:

1, the Selkirk Mountains, from the Rocky Mountain Trench to the Selkirk Valley; subdivided by the Purcell Trench into (a) Purcell and (b) Selkirk mountains. Here are the Kootenay and Lake Salish.

2, the Columbia Mountains, west of the last: Okanagan and some Shuswap.

3, the Cariboo Mountains.

4, the Plateaus proper, with deep-cut streams, but not dissected into mountainous topography. In this area live the Salish Thompson, Lillooet, and Shuswap; and the Athabascan Chilcotin, Carrier, Babine, Kaska, Tahltan, and Taku-tine; whom I have grouped into the Fraser, Upper Fraser, and Northern Plateau Apex cultural areas. Niska and Gitskyan territory also juts well into Plateau territory.

It seems expectable that other mountain masses may be separable as provinces within this large main or proper Plateaus province (4).

### H. PACIFIC MOUNTAIN SYSTEM

The Canadian Pacific Mountain System has two provinces:

1, the Coast Range proper of the mainland.

2, the Interrupted or Island Range formed by Vancouver, Queen Charlotte, and more northerly islands.

These correspond geographically, though not necessarily historically,[13] to the Sierra-Cascades (23) and Pacific Border (24) provinces in the United States. The Puget Trough, which divides the two provinces in the northern United States, continues the division in British Columbia, though it is there under water. The Coast Range is of Mesozoic origin. It is a denuded batholith, long and deeply dissected, heavily glaciated, and subsided. Its summit forms the inland boundary of the Northwest Coast culture area. The Central and Northern Maritime subdivisions of this culture occupy the island range and portions of the mainland range facing gaps in the island chain.

---

[13] Just as the Sierra Nevada and the Cascades, and again the several Coast Range systems, in the United States, possess distinct structures and histories.

## Mexico

For Mexico there exists a classification into physiographic areas by Thayer in 1916.[14] Although this runs over the boundary to take in adjacent parts of the United States, it is not wholly conformable in scheme to the Fenneman-U. S. Geological Survey classification, both in not grouping provinces into major divisions and at a number of special points. It would seem that the first five of the Thayer provinces as summarized below could be considered part of the Intermontane Plateaus division, in American and Canadian terminology. The sixth, the Gulf Coastal Plain, is admittedly one with the "Atlantic" Coastal Plain. The seventh, Tehuantepec, is somewhat hesitantly separated from this; and the eighth, Chiapas, is not discussed, apparently being regarded as part of the Central American highland. If this construal is correct, much the greater part of the area of the Mexican Republic would belong to the Intermontane Plateau system. This Plateau system or division, however, is conceived somewhat differently by Thayer. In the United States and Canada it lies strictly between the Rocky and Pacific mountain systems. In the Mexican classification it would include both the bordering mountain systems,—in fact, would extend beyond them to the shore of the Pacific. It is evident that the Mexican provinces have been treated more summarily, as might be expected from the less refinement of available knowledge. If the Rocky Mountain System within the United States alone is to be recognized as constituting four "provinces," it is obvious that the vast and complex Sierra Madre Occidental is likely to form more than one. Similarly, Thayer's Sonoran Desert is made to include the southern part of the American Basin-and-Range province, but is then extended south beyond the mouth of the Santiago, and westward to include the whole of peninsular California, at least the northern part of which Fenneman makes part of the Pacific Mountain System. Such taxonomic overlappings and discrepancies in rank are evidently the result of the fact that extant knowledge of Mexico is of a more preliminary character.

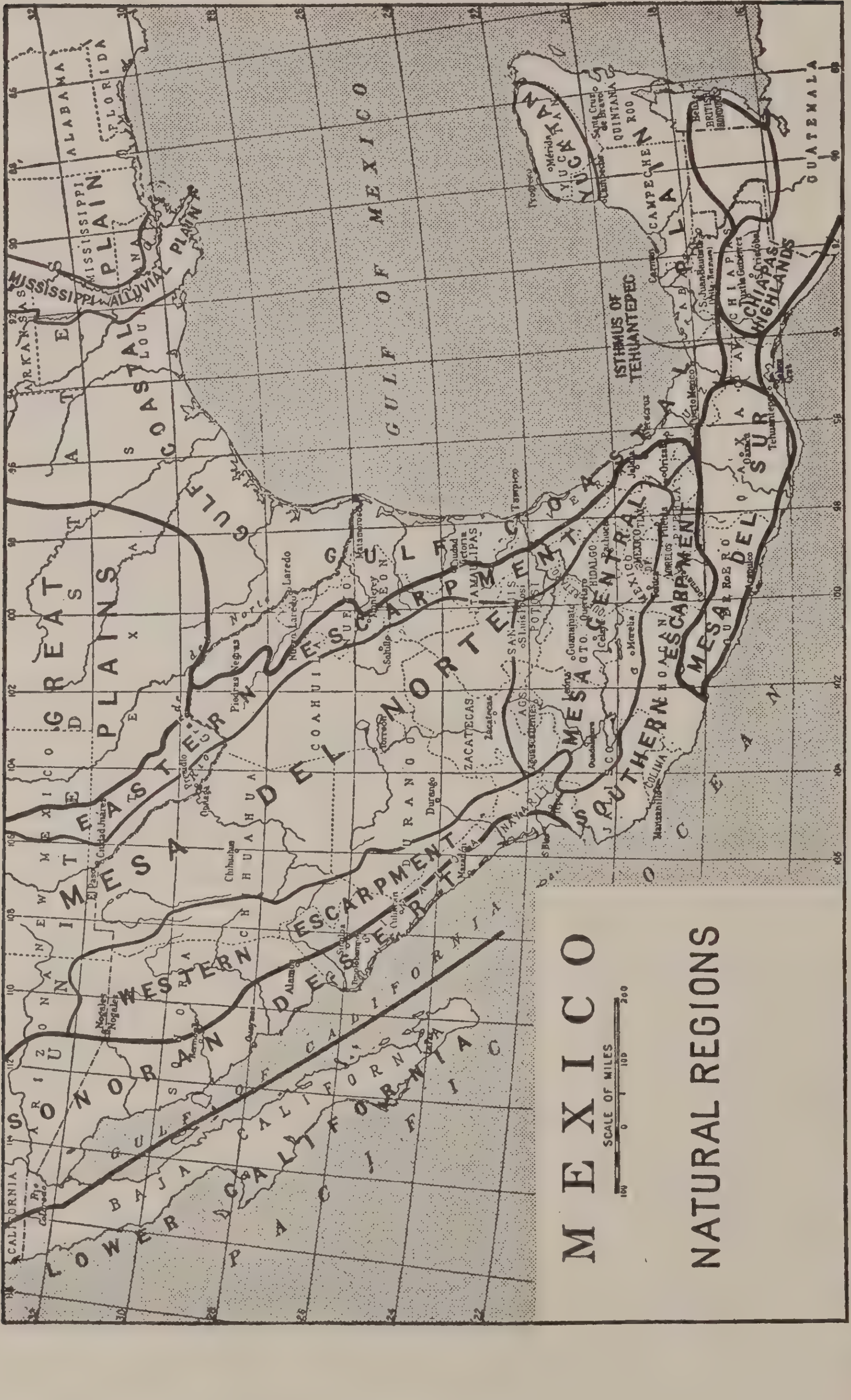
Thayer describes his first three or northwestern provinces, the Sierra Madre Occidental, the "Anahuac" or North-Central Desert Plateau, and the Sonora Desert, as characterized by separate ranges with intervening basins. Whether, however, the history of these is sufficiently similar to that of the Basin-and-Range formations of the United States to warrant inclusion under the term, is for geologists to decide.

I have renumbered and slightly renamed Thayer's areas as follows:

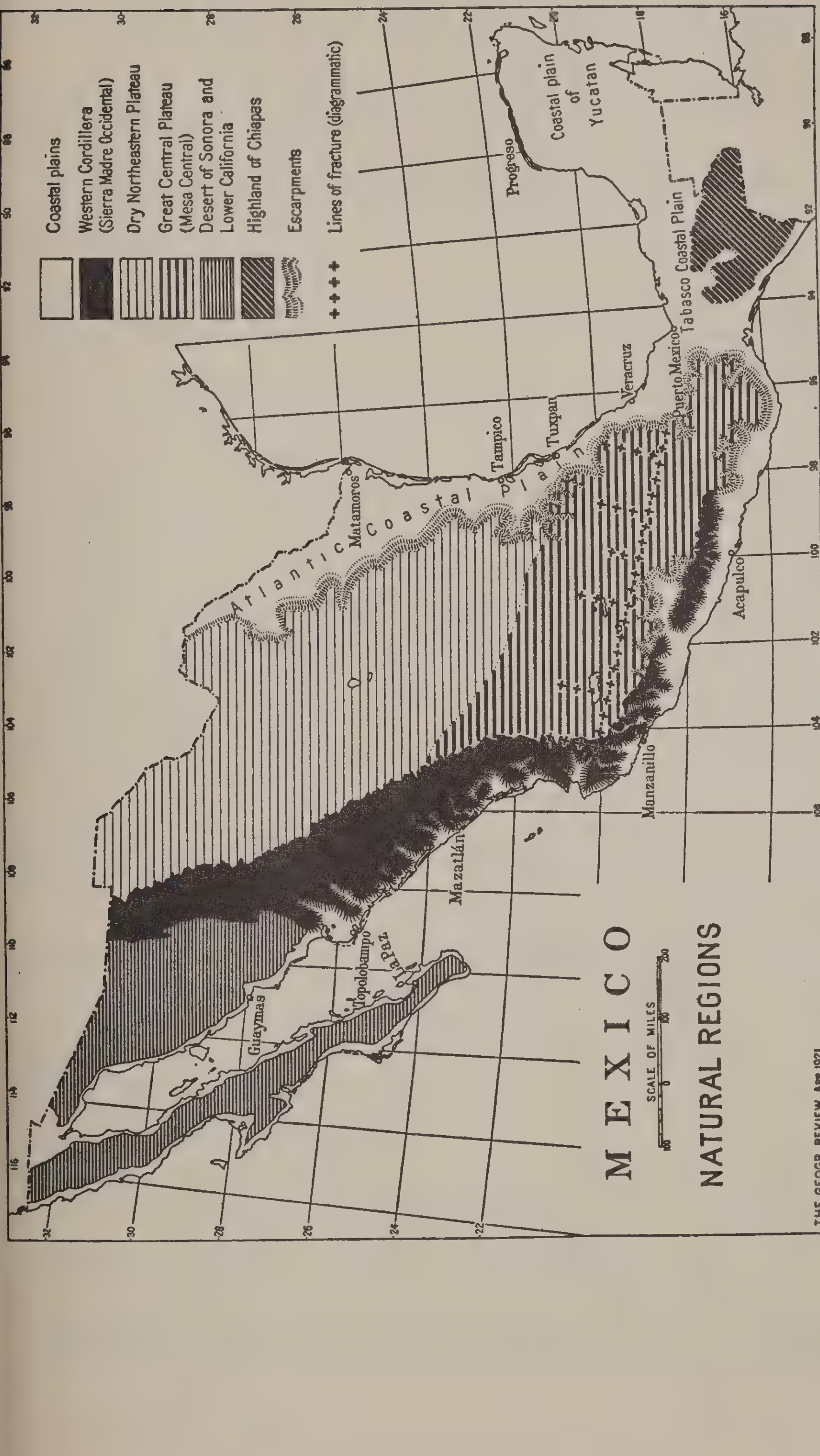
| | | |
|---|---|---|
| 1. Sierra Madre Occidental | 1. Sierra Madre | Intermontane Plateaus System ? |
| 2. Anahuac Desert Plateau | 2. (North-Central) Desert Plateau | |
| 3. Sonoran Desert | 3. Sonoran Desert | |
| 5. Volcanic | 4. Volcanic Area | |
| 6. Sierra del Sur | 5. Sierra del Sur | |
| 4. Gulf Coastal Plain | 6. (Atlantic) Coastal Plain | |
| 7. Tehuantepecan | 7. Tehuantepec | |
| | 8. Chiapas-Guatemala Highland | |

---

[14] Warren N. Thayer, The Physiography of Mexico, Journal of Geology, 24:61–194, 1916.


MEXICO
NATURAL REGIONS
SCALE OF MILES
GULF OF MEXICO
GREAT PLAINS
GULF COASTAL PLAIN
MISSISSIPPI ALLUVIAL PLAIN
MESA DEL NORTE
EASTERN ESCARPMENT
WESTERN ESCARPMENT
SONORAN DESERT
LOWER CALIFORNIA
MESA CENTRAL
SOUTHERN ESCARPMENT
MESA DEL SUR
GULF COAST
YUCATAN
CHIAPAS HIGHLANDS
ISTHMUS OF TEHUANTEPEC
PACIFIC OCEAN
GULF OF CALIFORNIA
BAJA CALIFORNIA
UNITED STATES
GUATEMALA
BRITISH HONDURAS

Map 22. Natural Regions of Mexico; from McBride. For comparison with the physiographic provinces of Thayer (map 7) and natural areas of Sanders (map 23).


MEXICO
NATURAL REGIONS
SCALE OF MILES
Coastal plains
Western Cordillera (Sierra Madre Occidental)
Dry Northeastern Plateau
Great Central Plateau (Mesa Central)
Desert of Sonora and Lower California
Highland of Chiapas
Escarpments
Lines of fracture (diagrammatic)
Atlantic Coastal Plain
Coastal plain of Yucatan
Tabasco Coastal Plain
Matamoros
Tampico
Tuxpan
Veracruz
Puerto Mexico
Progreso
Acapulco
Manzanillo
Mazatlán
Topolobampo
La Paz
Guaymas
THE GEOGR. REVIEW, APR. 1921

Map 23. Natural Regions of Mexico; from Sanders, Geographical Review, 1921. (By permission of the American Geographic Society.) For comparison with maps 7 (Thayer) and 22 (McBride). Compare also Sanders on vegetation (map 5).

The areas as delineated in map 7 are based so far as possible on Thayer's text, which differs at a number of points from his very sketchy map.[15]

These physiographic provinces of Mexico coincide rather unsatisfactorily with ethnic and cultural groupings. For instance, the Coahuiltec, Tamaulipec, Huastec, Totonac, eastern Nahua, and lowland Maya all live above as well as below the foot of the escarpment which forms the inner edge of the Atlantic Coastal Plain. The factor determining their inland distribution seems to be not so much the geologically structural feature as climate depending on absolute elevation. The Sierra Madre province contains without serious residuum several peoples—the Tarahumar, Tepehuán, Acaxee, and Teul; but leaves half out others just as important: Opata, Zacatec, Otomí. The Sonoran Desert province includes quite diverse cultures: South Sinaloa, Cáhita, Sonora, Sonora Coast, and Peninsular California. The province simply is too diverse climatically to support a uniform culture. Sinaloa was wet enough to harbor a culture of central Mexican type, and took it over. But arid Sonora and California leaned culturally on the north. The physiographic provinces, in short, mean something historically only if they are regarded as areas of underlying characterization, and their specific boundaries are ignored. In this rough way the North-Central Desert Plateau is the area of nonfarming culture; the Volcanic area takes in the Southeast, Middle, and West-Central Mesa cultures (high Nahua, Tarascan, Jalisco Highland); the Sonoran Desert is the Pacific coastal corridor between central Mexico and the Southwest; the Sierra del Sur is the area of Guerrero and Zapotec culture; the little Tehuantepec province coincides with the historic break between the Maya and the Nahua-Toltec-Zapotec centers of irradiation; and so on. To be sure, our areal delimitations of Mexican culture types are also inexact and highly tentative. But it seems that even if we had authoritative cultural delimitations, these would fail equally to show correspondence with the major physiographic divisions or provinces, except in the sense suggested. The provinces are too large and gross to make anything else expectable. The culture relations should be with their subdivisions of the provinces, or with climatic-vegetational areas.

McBride has also classified the "natural regions" of Mexico.[16] His scheme (map 22) is adapted from those of Thayer and Sanders here reproduced (maps 7 and 23) and one by A. Foster.[17] Although the McBride "natural" areas are largely physiographic, they also express climatic and socioeconomic considerations. Essentially McBride follows Thayer, with some called-for subdividing, as the opposed lists in the following comparison of their classification show.

---

[15] Fig. 1, p. 63.

[16] G. M. McBride, The Land Systems of Mexico, Am. Geogr. Soc., Research Ser., no. 12: 5–21, map 1.

[17] In C. C. Colby, Source Book for the Economic Geography of North America, 1921. Miss Foster's section, The Principal Geographic Divisions of Mexico, 342–355, map 10, p. 345, was written for Colby's volume.

Her divisions are: Sonoran Desert, Sierra Madre Occidental, Northern Basins, Sierra Madre Oriental, Northern Gulf Coastal Plain, Central Plateau, Sierra del Sur, Eastern Tierra Caliente, Western Tierra Caliente, Highland of Chiapas.

COMPARISON OF THAYER AND McBRIDE CLASSIFICATIONS

| *Thayer* | *McBride* |
|---|---|
| Sierra Madre Occidental | Western Escarpment |
| Anahuac Desert Plateau | a. Mesa del Norte<br>b. Eastern Escarpment |
| Sonoran Desert | a. Sonoran Desert<br>b. Lower California |
| Volcanic Area | a. Mesa Central<br>b. Southern Escarpment |
| Sierra del Sur | a. Mesa del Sur<br>b. (Southern) Littoral |
| Gulf Coastal Plain | a. Gulf Coastal Plain<br>b. Yucatán |
| Tehuantepecan | Isthmus of Tehuantepec |
| (Chiapas Highlands) | Chiapas Highlands |

The principal differences are that McBride pushes the Mesa Central farther north than Thayer's Volcanic area, to take in the southern fringe of the Northern Interior Mesa; and that he assigns the coast district from the Santiago to the Balsas to his Southern Escarpment instead of the Sierra or Mesa del Sur. In regard to human utilization of land, the McBride classification seems more satisfactory than Thayer's overly summary one. It is a compromise of several considerations of distinct type. It therefore fits the classification of native cultures somewhat better than does the purely physiographic delimitation; but this is because it partly reflects cultural considerations.

## Physiography and Culture

It remains to consider the general relation of the foregoing physiographic areas to cultural ones. The principal accordances are shown in the accompanying list, table 17. To this could be added a number of correspondences of a topographic line to an ethnic or cultural one without the coincidence of two areas. Examples are the Piedmont-Atlantic Coastal Plain division; parts of the Basin-and-Range limit toward the Colorado Plateaus; the Basin-and-Range line against the Sierra-Cascades province, which throws the Klamath-Modoc and most of the Achomawi into the Basin, where they have also been classified culturally.

Two facts must be carried in mind in this connection, as operating against a high expectability of agreement of physical with cultural groupings. First, about half of the topographic areas are mountains or highlands. But these are likely to be avoided in settlement when valleys or lowlands are adjacent, especially so long as population pressure is low. A range may be of the utmost importance in geographic structure, yet serve culturally for little more than hunting territory or tribal limit. The ethnographer will therefore properly draw his boundary at the crest; the physiographer, at the eastern or western foot of the range. When we have ethnic settlement maps for the greater part

## TABLE 17

### Principal Correspondences of Physiographic Provinces with Cultural and Ethnic Areas

United States

| | |
|---|---|
| Superior Upland (1), Laurentian Highland (A2, Canada) | Northern Great Lakes |
| Central Lowland, Eastern Lake section (12a; incl. Eastern Ontario Basin and Ontario Peninsula, D1a, D1b, in Canada) | Lower Great Lakes, and Wisconsin |
| Central Lowland, Till Plains (12d) | Ohio Valley–Illinois (approx.) |
| Great Plains (13) and Canadian Third Prairie Steppe (D4b) | Plains (approx.), esp. Northern Plains |
| Atlantic Coastal Plain, Embayed section (3a) | Southeastern Algonkin |
| Mississippi Alluvial Plain (3e) | Southeast Climax, etc. |
| West Gulf Coast (3f) | Red River and Northwest Gulf Coast |
| Rocky Mountain System, Wyoming Basin (17) | Wind River etc. Shoshone |
| Sierra Nevada (23a) | Hill Penutians, etc. |
| Pacific Border, Puget Trough (24a) | Puget Sound and Willamette Valley |
| Olympic Mountains (24b) | Central Maritime, South (mainland portion) |
| Oregon Coast Range (24c) | Lower Columbia |
| Klamath Mountains (24d) | Lower Klamath (approx.) |
| California Trough (24e) | Valley Penutians |
| California Coast Ranges (24f) | Remainder of California area |
| Los Angeles Ranges | Southern California |
| Lower California (25) | Peninsular California, incl. Diegueño |

Canada

| | |
|---|---|
| Canadian Shield (A1) | Subarctic (Eastern: whole; Western: east portion) |
| Laurentian Highland (A2) | Northern Great Lakes |
| Appalachian Highlands (C1–5) | North Atlantic Slope; all Algonkin |
| Eastern Ontario Basin, Ontario Basin (D1a; D1b) | See Central Lowland above |
| Manitoba Lowlands: First Prairie Steppe (D2) | Cree |
| Lower Cretaceous Plateau: Second Prairie Steppe (D4a) | Northern Prairie |
| Upper Cretaceous Plateau: Third Prairie Steppe; and Foothills (D4b, D4c) | Northern Plains |
| Intermontane Plateaus (proper: G4) | Fraser, Upper Fraser, Northern Plateau Apex |
| Coast Range (H1, H2) | Northwest Coast |

TABLE 17—(*Continued*)

| Mexico | |
|---|---|
| Sierra Madre (1) | Northern, Central, Southern Sierra Madre (approx. only) |
| North-Central Desert Plateau (2) | Northern Mexican Interior Plateau, Northeastern Central Mesa (approx.) |
| Sonoran Desert (3) | Southwestern areas 3, 4, 6, 9, Mexican area 14 |
| Volcanic Area (4) | Southeastern Central Mesa, Michoacán, Jalisco Highland (approx.) |
| Sierra del Sur (5) | Jalisco Coast, Guerrero, Oaxaca-Tehuantepec, part of Vera Cruz |
| Atlantic Coastal Plain (6) | Seaward parts of Yucatán Peninsula, Vera Cruz, Tamaulipas |

of the continent, instead of ethnic ownership or claim maps, the accord with geology will no doubt become closer.

Second is the problem of the order of classification, which is bound to be different according to the approach made. A geologic major division, which is based on underlying structure and history, may be much less apparent on the surface, and may correspond, if it corresponds at all, to a quite subsidiary ethnic or cultural demarcation; and vice versa. A late glaciation, in rendering drainage sluggish and establishing numerous lakes, may assimilate adjacent parts of an Archaean shield and of a geologically much later lowland, favor water as against land communication, and thus affect culture. Temperature again, which is as dependent on latitude as on altitude, will heavily influence vegetation irrespective of geologic structure. An agriculture built around a non-frost-resisting plant like maize, and the cultural phenomena associated with it, may therefore come to an end in the middle of a physiographic province simply because the northern practicable limit of this type of farming has been reached. Wherever farming has been pushed to any of its natural limits, the cultural boundary is especially likely to be both shifting and meaningless in terms of physiography. The Pueblo distribution is a clear illustration of this. On the other hand, in areas well inside or outside the limits of farming feasibility, such factors are likely not to be operative, and cultural groupings are once more free to coincide with physiographic ones, if these are sufficiently potent to reach culture.

Reasons analogous to these will prevent any one set of natural factors, geologic, vegetational, climatic, or hydrographic, from affecting culture with uniform potency. Here one factor will be influential, another negligible; in a different region, the relation will be reversed; and in addition, as a culture becomes strong enough, it may be able to digest a large variety of natural influences without becoming seriously altered. For this reason the question of the relative importance of geologic, climatic, and vegetational factors on culture must remain a secondary problem. All natural factors can be and at times are influential. Each situation must be examined individually. It is only a most general estimate that could be made of the relative average strength of the several factors.

One fact, however, is certain: the culture-physiography accord was much stronger on the Pacific coast than in the remainder of the continent. Half of the concordances within the United States listed in table 17 fall into the narrow Pacific Coast belt. The causes of this weighting are by no means clear. One may be the very narrowness of the belt, which disposed its culture forms one-dimensionally. Each was therefore open to the play of other cultures, generally speaking, only at its two ends, as against on all sides elsewhere. The interplay being simpler, there remained more opportunity for conformity with natural environment. I advance this explanation only tentatively. Yet the accord of the Northwest Hygrophytic Coniferous forest with the Northwest Coast culture, probably the most striking and exact in the field of plant cover, seems to strengthen it.

There is also the fact that the same Pacific stretch—the Northwest Coast culture plus California—was, with the partial exception of the localized specific Pueblo culture, the most densely populated area north of central Mexico. This may be more than a coincidence. The density we have seen to be correlated with sessility of population, and this must work, other things being equal, toward stability of each culture within its area. The process of local adaptation to nature is therefore also likely to have been able to go on undisturbed for long periods. Further, the density would tend toward cultural vigor and self-sufficiency. Especially would this be true because the Intermountain area backed the Pacific coast for nearly its whole length, and served as a shock absorber against foreign cultural influences. At that, the Intermountain area on the whole was sufficiently unfavored by nature to keep its population and culture at a fairly low level.[18] It therefore tended to dilute and weaken the culture that reached it from the east; in fact, to draw from the Pacific coast rather more than to impinge actively on it. All this left the Coast culture area able to luxuriate in relative isolation while adjusting itself to its locally varying habitats.

One other reason suggests itself for the unusual degree of accord of culture and physiography on the Pacific coast: the greater decisiveness of its topography. There are high ranges and definite valleys, or at least coastal strips; there are no wide plains, nor extensive plateaus. There is local dissection and fill; but no worn-down maturity. The last-named feature is also lacking, it is true, in the Rockies and Intermountain region; but there the topography rises out of, or is sunk into, a level of plateaus or high plains, and these in turn pass over into other areas; whereas the Pacific belt is shut off by the long wall of Sierra Nevada, Cascades, and Canadian Coast Range, within which the local topography remains definite. How far this difference is real is for geographers to decide; so far as it is, it may well be reflected in the local cultural grouping.

---

[18] The one exception is at the southern or Pueblo end. But Pueblo agriculture, on which Pueblo culture rested, was so near the limits of its feasibility as to be essentially on the defensive, so far as the outside world was concerned, from the beginning.

## XIII. RELATIONS OF ENVIRONMENTAL AND CULTURAL FACTORS

THE ASSUMPTION upon which the discussions in this section rest is one already expressed in the introductory section: namely, that on the one hand culture can be understood primarily only in terms of cultural factors, but that on the other hand no culture is wholly intelligible without reference to the noncultural or so-called environmental factors with which it is in relation and which condition it.

An example will illustrate. Six American states stretching in a belt from Ohio to Nebraska today produce nearly half the world's maize crop. This is a region in which the Indians also farmed maize, but with less intensity than in many other regions; and their population remained scant. The difference is not in the plant, nor fundamentally in methods of farming it. It is factors extrinsic to the cultivation itself which have changed an area of below-average maize-growing into one of most successful specialization. These factors are cultural: domesticated animals, economic demand and distribution facilities, methods of transportation, improved machinery. The natural environment remained the same.

However, maize-farming of itself, like other subsistence and economic activities, and through these all cultural activities, is obviously conditioned by "natural" factors such as climate, soil, and drainage. The frostless season must be warm and long enough, the precipitation within it sufficient, and so on. Where these conditions fail, the limits of maize-growing are reached. This inability tends to affect the whole of a culture unable to farm; but quite differently according to situation: in California and eastern Canada, for instance. The difference in effect is due to both environmental and cultural causes, which vary areally. In California, nature provided other food to make population in the nonfarming territory denser rather than lighter. The local cultures thus were able to flourish with some vigor and with considerable independence of the farming ones near them. In the East, there was no comparable natural food supply, and the hunting population remained light. This put it in a position of dependence, culturally, on the adjacent farming populations. And at the same time the cultural medium was so much thinned by the smaller subsistence possibilities that many elements of the farming culture failed to obtain a foothold to the north.

It is in this way that the interactions of culture and environment become exceedingly complex when followed out. And this complexity makes generalization unprofitable, on the whole. In each situation or area different natural factors are likely to be impinging on culture with different intensity.

It does seem worth while to review briefly the more striking cases of influence of the various environmental factors, as indicated by the degree of agreement between cultural areas and natural ones of various kinds. The intent is not so much to evaluate in general terms the strength of each environmental factor as to recognize specific cases where environment is of importance.

## PHYSIOGRAPHY

Natural areas, in the sense of geologic or physiographic units, have already been compared at length with cultural and ethnic areas, and the more striking correspondences listed (table 17). These correspondences are more numerous and definite on the Pacific than on the Atlantic side of the continent, with Mexico possibly promising to fall rather with the Pacific side when it shall be well enough known.

Under "Population" it has been noted that the more decisive differentiation and variegation of local landscapes on and near the Pacific is probably connected both with a greater sessility of population and a stronger tendency toward speech diversification there.

## NATURAL VEGETATION

Plant cover is obviously almost always likely to stand in relation to culture. It largely expresses climate; it tends heavily to determine the fauna; and it enters directly into subsistence, besides at times affecting travel and transport. It is rather surprising, in fact, that culture is not therefore a function of natural vegetation to a greater degree than actually obtains. That it is not, suggests the preponderant strength of purely cultural forces. However, there are a number of neat correspondences of areas of plant cover and culture. Among the principal of these are the following:

The Northwest Coast culture tallies almost perfectly with the Northwestern Hygrophytic Forest.

Within this, the area appearing most aberrant culturally, the Willamette Valley, is also aberrant phytogeographically, being classed as forest by some authorities, as grassland by others.

In the Southwest, the historically primary line of cleavage between cultures of Pueblo and of Sonora-Gila-Yuma type is closely paralleled by a division of the area into semidesert and true desert.

The Pueblo semidesert is part of the sagebrush-juniper semidesert of the Great Basin, into which both Basket Maker and Pueblo culture proliferated.

Snake River drainage affiliates not with the Columbia but with the Great Basin in prevailing plant cover, speech and, apparently, culture.

The short-grass plains and tall-grass prairies, before the introduction of the horse, probably harbored cultures respectively of prevailing western mountain and eastern forest affiliations.

The Wind River Shoshone, basically a Basin tribe with a recent overlay of Plains culture, lived in a sagebrush habitat even though this drains into the Mississippi system.

The tropical region of southern Florida corresponds to a local variant of the general Southeastern culture.

The northern Iroquoian territory is characteristically one of Northeastern Hardwood forest.

The classic Maya culture is situated in tropical rain forest, the sub-Maya culture of the other Mayan tribes in more open plant cover.

The Pacific Nicaragua or Chorotegan culture lay in a region of relatively arid vegetation.

East of the Mississippi, correspondences are less definite than elsewhere. The varieties both of culture and of plant cover differ from one another by small intervals, so that conditions are more nearly uniform on both scores.

Mexico, on the other hand, presents sharp contrasts, but knowledge of the ecology is too imperfect, and that of the cultures too little organized, to make most classifications and correlations more than tentative.

## CLIMATE

Climate has been incidentally rather than systematically considered in this work. It is not an easy thing to deal with; partly because of its compositeness. Temperature, precipitation, seasonal régime, besides minor factors, are all of varying influence. Here one component and there another becomes specifically influential upon culture. Temperature may be uniform in two regions and yet the precipitation cause them to vary enormously as cultural habitats; or the reverse. A climatic classification taking cognizance of all factors is obviously the desideratum. A basis for this is provided by the Köppen system. But the execution and mapping of this has been on a world-wide scheme rather summary for comparisons within a continent, and certainly not equal in accuracy of detail to the available plant-cover classifications. Since these so largely reflect climate, besides being more directly related to subsistence, I have thought it advisable to center present attention on them.

Russell has recently applied the Köppen scheme, with modifications resulting from purely American considerations, to two parts of the continent: California, and the dry parts of the United States.[1] Geographically broader studies as intensive as these will make possible a rather exact comparison of climate and culture.

I have gone over Russell's California climate classification with care. On the whole it seems to agree somewhat more closely with ethnic than with cultural groupings. But the California situation on all three scores is notoriously intricate, and the results of the comparison cannot fairly be presented without a mass of detail going beyond the scope of the present work. I hope to give this matter separate treatment in a subsequent paper.

From Russell's second monograph I reproduce two maps in somewhat simplified form. The first (map 24) shows the dry climates of the United States, classified into cold and hot steppe and cold and hot (and torrid) desert climates.[2] In geographic and cultural terms, the distribution and correspondence of the areas of these climates is as follows.

The western limit of steppe and desert against humid climates is the (eastern foot of the) Cascades-Sierra Nevada wall. The San Joaquin Valley is arid; in its middle, desert. On the coast, dry climate begins between Santa Barbara and Los Angeles, to continue southward. Thus not only all the Northwest coast within the United States, but indeed most of cultural California, is humid; southern California is variegated humid and arid. The Achomawi and Washo still live mainly in humid climate.

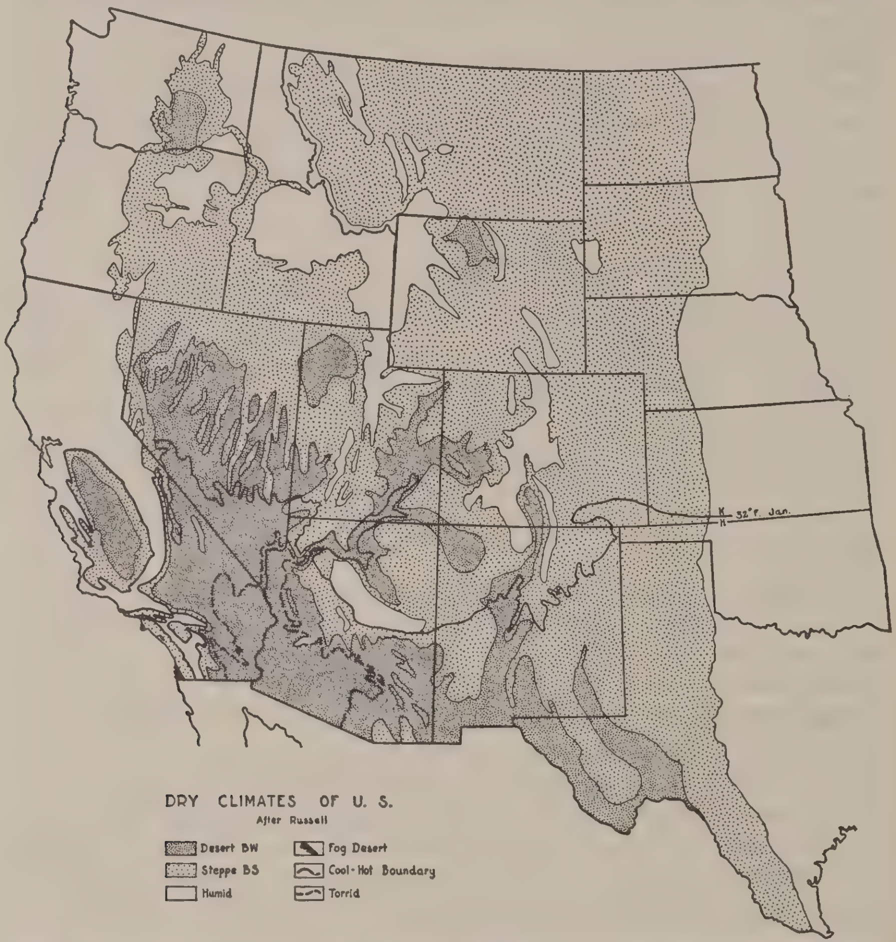
---

[1] R. J. Russell, Climates of California, UC-PG 2:73–84, 1926, and Dry Climates of the United States, I, Climatic Map, same, 5:1–41, 1931.

[2] For a definition of these classes, especially the primary ones of desert (W), steppe (S), and humid (H), it is necessary to consult the original work, since the formulas and diagrams on which the distribution rests are complicated. The line which separates the "hot" and "cold" types within the two major dry climates is the January isotherm of 32° F. The "very hot summer desert" climate, BWhh, is hot summer desert plus three months with mean maximum temperature above 100° F.

On the east, the steppe-humid boundary follows the hundredth meridian rather closely. Most of the Plains area (as distinct from Prairie) thus lies in steppe. The climatic boundary given can be assumed as not very far from the eastern limit of range of the old, prehorse culture leaning on a Rocky Mountain habitat with seasonal incursions into the plains.

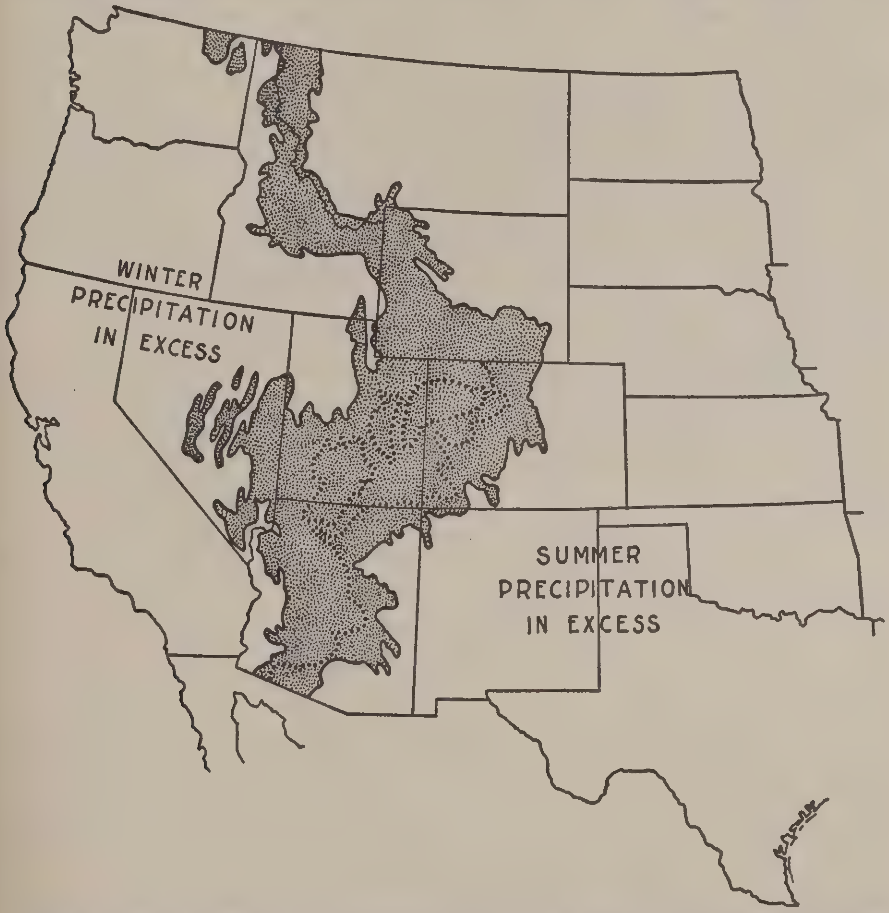
The historic and most of the prehistoric Pueblo culture lies in steppe. Pueblo occupations of hot desert were the lower Rio Grande, Chihuahua, Upper and Middle Gila, and Southern Nevada phases, all transient; an arm of cold desert also extends up the San Juan. The ancient non-Pueblo red-on-buff ware culture centering on the Gila lay wholly in desert; its focus, like the historic Lower Colorado culture, in torrid desert. The Great Basin culture area lies mostly in steppe and nearly all in cool arid climate. In Nevada, desert prevails, but broken by nearly a dozen parallel ranges rising into steppe climate.



Map 24. Dry Climates of the United States; adapted and slightly simplified from Russell. Desert climates in heavy shading, steppe type in light shading, humid unshaded. The January isotherm of 32° F. (solid heavy line) divides cool dry from hot dry climates. Torrid desert, with three summer months above 100° F., within broken line.

The line separating cool from hot arid climates approximately separates the northern Plains from the southern Plains tribes. It also separates the areas occupied by Pueblos both early and late from those to the south held by them only for a time. But it seems to correspond to nothing of primary ethnic or cultural significance in Nevada and California.

Russell's second map shows the variation in seasonal precipitation in the western United States. He modifies the Köppen scheme by recognizing nine types of seasonal régime. In map 25 I have condensed these into three. The first type (western area) corresponds to his types S and Sf (dry summers, wet winters), with precipitation in the two wettest winter months as 2:1 or more compared to the two wettest summer months. The second (eastern area) corresponds to Russell's types W, Wf, fW, fw (dry winters), with precipitation in the same months as 4:7 or less; and the third (middle area) to his Sf, sf, f, with the winter-summer ratio in the same months between 2:1 and 4:7, or reasonably balanced. For precise understanding of the scheme, it is again necessary to refer to the original text.

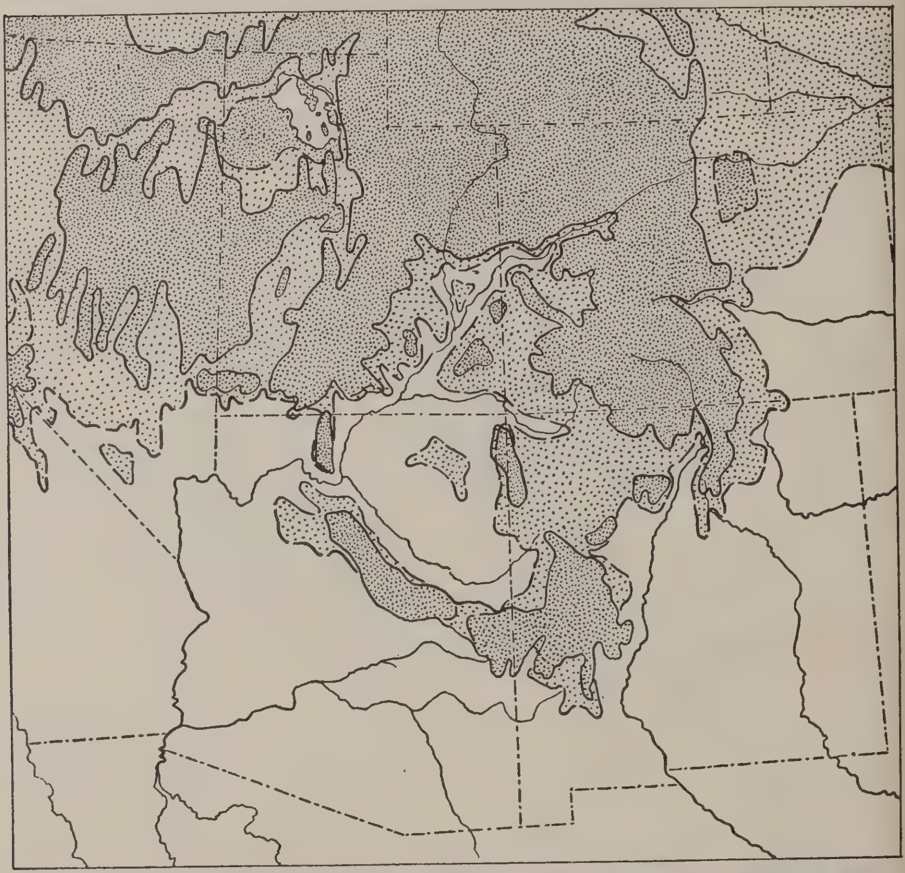


Map 25. Seasonal Distribution of Precipitation in the Western United States; simplified from Russell. In the stippled area, the ratio of the precipitation in winter to that in summer (two wettest months) lies between 2:1 and 4:7. The dotted line indicates the western limit of a 6:5 ratio.

What this map shows is that most of the true Pueblo area, ancient and modern, falls within the region of definite excess of summer rains. Such of it as does not, is not far over the boundary, being included in Russell's next régime, "f," for which there is still a summer excess, though as low as about 6:5 (western limit shown by the dotted line in map 25). Where winter rains are definitely in excess, there is no native agriculture at all, except along the self-irrigating flood-plain patches of the lower Colorado.

The inference is twofold:

The definitely maize-dependent Pueblo culture remained limited to an area of sufficient precipitation during the growing season of the plant; which in an arid climate means excess of summer rains. To the south a limit to this culture was probably set by aridity, which reached a point where even heavy summer concentration no longer sufficed. To the north, the limit was evidently set by cool summers, likely to bring fatal frosts between the germination and harvesting of maize: see map 26. It is plain from this map that the area into which the Pueblos concentrated after 1500 all has a normally frostless season of more



Map 26. Growing Season in the Southwest, in Terms of Average Dates of Last Killing Frost in Spring and First in Fall; adapted from Atlas of American Agriculture, Pt. II, Sec. I, pp. 2, 6. Heavy shading, both dates within the period June 1 (solid line) to September 30 (broken line); that is, normal growing season definitely less than four months. Light shading, one date outside the same period; season about four months. Unshaded, both dates outside the period: hence average season longer than four months.

than four months. Taos alone seems to be just beyond the edge; but even the patch occupied by Laguna and Acoma is accounted for by a west-extending arm of long-summer territory. All the abandoned Pueblo tracts also fall partly or wholly in this climate; in the San Juan drainage, for instance, the Kayenta district entirely, the Chaco and Mesa Verde fractionally. Much the same thing is shown, though the basis of computation is somewhat different, by map 27 (p. 212, below).

Native California failed to become agricultural because of its dry summers, for which, so far as maize was concerned, no amount of winter precipitation could compensate. In most of the eastern United States cold winters and winter precipitation did not matter, because low elevation permitted the summer to be hot and long enough, and the considerable and relatively even precipitation contained summer rainfall enough, for maize to thrive. Obviously, these conditions have also determined modern maize distribution: California today is not notably a corn-raising state. As between the summer-showered hot desert of southern New Mexico-Arizona and the dry-summer hot steppe climate of southern California, Pueblo culture evidently could and did cling to its maize foundation and persist somewhat precariously in the former, but was not able even to become established in the latter. The country between—roughly, central and western Arizona—in general suffered from too great absolute aridity and evaporation to make primary maize subsistence possible except where local natural flood conditions as on the lower Colorado, or specialized technique as in the Gila-Salt Valley, made irrigation on a fair-sized scale possible.

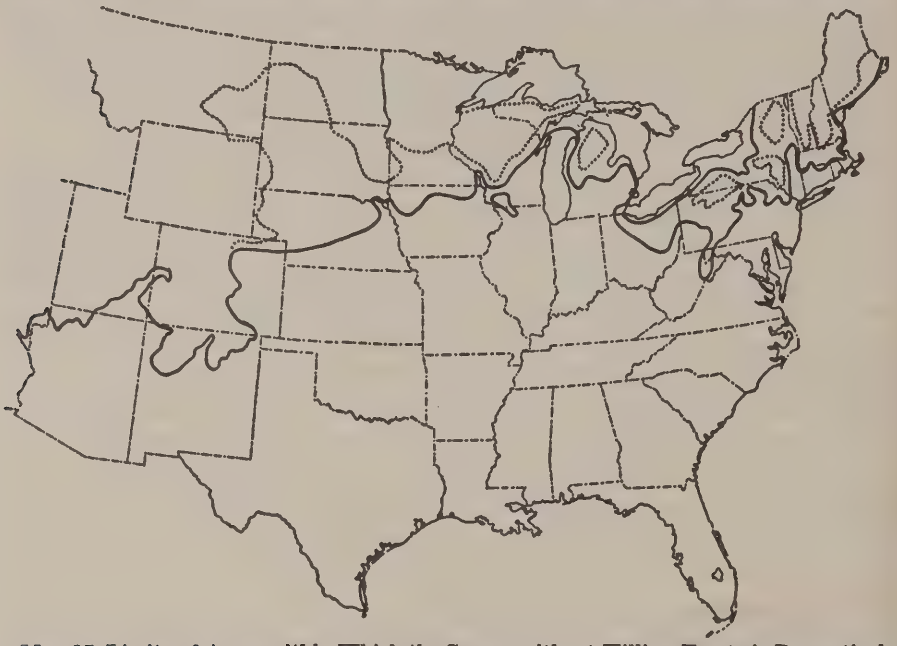
The idea that seasonal distribution of rainfall largely controlled both the successful functioning of Pueblo culture and the nonagriculture of California, I owe to my colleague Sauer. Russell's careful maps render possible the more precise application of the idea.

Map 27, on a smaller scale than map 26, shows the areas in which a growing season of at least 120 and 100 days, respectively, can be counted on in four years out of five. It is added for what it shows concerning the northern limit of farming east of the Pueblos. Eastern Wisconsin, the parts of Ontario and New York occupied by Huron and Iroquois, the Hudson Valley, Connecticut, and the coasts of Massachusetts are all in territory which could reasonably count on at least 120 days for maize to grow. These are all districts in which culture flourished, or population was dense, in comparison with immediately adjacent districts. By the location of settlements in specially sheltered spots, it was probably possible in this area to reduce the expectability of a loss of crop through frost from two years in ten to one or less. It is clear that, as among the Pueblos, an agriculture based on tropical plants had here been pushed to its northern limit of potentiality, at any rate as an agriculture important and not merely ancillary to existence. On the other hand, the adjustment was as stable as it was nice, indicating the firmness of the attachment of the cultures in question to their farming basis.

Map 27 also explains why maps 15 and 16 show a relative meagerness of archaeological remains in northeastern Ohio, which lies outside the 120-day line. There is some discrepancy in the upper Muskingum Valley; but otherwise the maps conform.

The one successfully farming highland people, the Cherokee, were far enough south to be in good maize country. At the greatest altitudes occupied, their growing season was as long as that of their ancient northern kinsmen the Iroquois and Huron.

The 100-day line, which marks the extreme limits of native agriculture wher specializing on the quickest maturing varieties of maize, is of no great importance in the Appalachian region, except locally. West of the Mississippi, however, it is significant because it adds as potential farming territory southern Minnesota and the Missouri Valley up into North Dakota, the home of most of the Dakota and of the "Plains Village" tribes. Yet the conditions are difficult enough to make it probable that only a people long and deeply addicted to agriculture would have tried to farm here. An introduction of maize-growing into this area by diffusion in the ordinary ethnological sense, by a process of imitation and learning, seems unlikely; the import was evidently by ethnic migration of farmers. This conclusion is in accord with the customary assumptions based on legendary tradition and inferences from speech relationship of the tribes concerned.[8]



Map 27. Limits of Areas within Which the Season without Killing Frosts is Respectively 120 Days (solid line) and 100 Days (dotted line) in Four Years out of Five; simplified from Atlas of American Agriculture, Pt. II, Sec. I, p. 12. The lines indicate the limits, respectively, of reliable and of precarious or sporadic maize growing, and therefore of all agriculture, in native times.

---

[8] Just as the present monograph was being given definitive form, C. W. Thornthwaite published The Climates of North America according to a New Classification (Geogr. Rev., 21:633–655, 1931). The plan of classification differs from Köppen's in substituting precipitation efficiency and temperature efficiency for precipitation and temperature as pri-

## WATER

Water is obviously a factor to which culture tends to effect a strong adaptation, primarily in regard to subsistence, also to settlement and transportation. So far as food supply is concerned, water, whether fresh or salt, normally comes in only as providing a fauna, not a flora. The chief exception is shallow lakes and lake marshes bearing wild rice or water lilies (wokas).

The greatest effect of water on culture in most of native North America seems to be through population increase, which in turn is brought about by the added subsistence opportunity. The ocean with its shore may sometimes provide actually more food than the land; the two together will normally provide more than the land alone. This tendency has been abundantly exemplified in the discussion of native population densities (maps 18, 19, 21). However, there are some unexplained and surprising variations of the densities on certain lengths of coast line (map 21).

On the Pacific side, the higher concentration of coast population resulted, in most areas, in a corresponding intensification as well as specialization of culture. On the Atlantic coast, such an effect is scarcely noticeable. The reason probably is the general narrowness of Pacific coast land, which often is wholly restricted to beach, coupled with long ranges beginning to rise almost from the beach and sharply dividing shore from interior. The wide, gentle, Atlantic coastal plain, on the contrary, tends to keep shore and inland linked by its almost insensible gradation.

Along and near the Arctic Ocean the sea provides more food than the land, so that the Eskimo, who generally have also some land-hunting opportunities, are more populous than the Athabascans and Algonkins of the interior. It might be disputed whether this has led to a higher culture level; but it has certainly resulted in marked diversification of culture between coast and inland.

Besides the sea, its concomitant in the North, ice, has been a factor of greatest importance in Eskimo economy. The presence of rough pack ice, smooth sea ice, and open sea determines the presence or absence of mammalian and other species, and the opportunities for taking them, as Boas and Steensby

---

mary climatic determinants. Precipitation efficiency is precipitation-evaporation ratio, and temperature efficiency the summation of monthly indices which equal (T–32)/4 Fahrenheit or 9T/20 Centigrade. How far these differentiators of climates are soundly established, and how far data are available to allow of their use, must be left to climatologists to decide. Thornthwaite's large map shows in the southern and western parts of the continent the local diversification customary in climatic and vegetational maps. There are some interesting results: the same climate in the Great Smoky district of Cherokee territory as on the Northwest Coast; a belt of subhumid winter-deficient tropical climate from Colima through Guerrero, Oaxaca, and Chiapas to the Yucatán Peninsula and northern Guatemala; the same highly arid mesothermal climate common to two areas centering around the lower Colorado and the middle Rio Grande. Beyond a certain temperature level, precipitation efficiency is of course negligible. The undifferentiated taiga or subarctic forest coincides well with the range of northern Athabascans and Algonkins. The tundra is almost wholly in Eskimo possession; but not conversely: from the mouth of the Yukon south, the Eskimo live in taiga climate. This is also the region of greatest richness of Eskimo culture. Smaller maps for the United States emphasize especially two lines: P/E–48, following more or less longitude 98°; and T/E–48, more irregular from east to west, coinciding approximately with the northern limit of easy maize culture.

have shown. The ice in turn depends not only on temperature but also on depth of shore waters, indentation of the coast line, and winds and currents. The results of these variations are a number of essentially equivalent but well differentiated forms of the Eskimo economy, reflected in material culture, technology, and habits of life. The principal of these forms have been listed in the discussion of the Eskimo culture area. Roughly, it might be said that it is shore residence which makes Eskimo culture distinct from adjacent Indian, ice which primarily determines what form the Eskimo culture of any locality assumes.

In Mexico and Central America the coast as such seems to have exerted little influence. The reasons for this condition are not clear. Among those which might be suggested are habits of addiction to agriculture, so strong as to incline to become exclusive; and the nature of most rivers in Latin America, which tend to be only seasonally navigable except in their lowest courses, carry no important fish supply, and were of importance chiefly in providing bottom lands fertile for farming. On the whole, this fundamentally negative attitude toward the sea continues as far as high cultures extend in South America. Coastwise fishing was important locally; but it nowhere seriously influenced the greater cultures as a whole—perhaps because they were areally and populationally large. Coastwise navigation also seems to have left no certain decisive effects of much moment. The contrary has been suggested or assumed, as between southern Mexico and Central America, on the one hand, and Ecuador and northern Peru, on the other, by Joyce, Rivet, and Linné. But the specific evidence is, to date, rather slim. On the Atlantic side Yucatán and Cuba certainly had contacts by sea, but the effects of this on Cuban culture seem surprisingly slight.

Beyond Mexico also, on the Gulf eastward as far as the Mississippi, and again in southern Florida, the coast seems to have effected little condensation of population or intensification of culture. But here the causes were probably different from those in Mexico, since the interior was nonagricultural.

In the development of the Northwest Coast culture, the original environmental factor of importance, as has been noted above in the detailed consideration of this culture, is likely to have been the rivers rather than the sea. The streams are relatively numerous, fairly large in volume even when short, sometimes great in both volume and length, and carrying salmon and other fish that come in enormous runs. There was high seasonal variation, but it was essentially in the fish, rather than in the rivers as in Mexico. This condition allowed the population to reside, travel, and in large measure feed itself by means of the streams, without cutting itself off from land subsistence or habits. Later, relative stillness of salt water in regions like Puget Sound, Georgian Bay, and numerous large fjord "inlets," farther north, tended to coax and train local groups for the sea, finally ending by giving some of them a more maritime aspect, with an attendant shift in climax habitat and cultural values and intensification within the Northwest Coast frame as a whole. This is hypothesis, but so far as it may hold it affords an exemplification of one type of relation between natural environment and culture.

In more complex ways, too, water has been a factor through a combination of influences on subsistence, transportation, and other aspects of culture which cannot always be clearly analyzed. It can scarcely be an accident, for instance, that such culture focusing as is discernible in the Southeast existed on the lower Mississippi, with the coast cultures on both sides rather below average level. Added subsistence from the river was scarcely the important factor in the determination of the Natchez center; nor does the river seem to have served as a serious defense barrier. Also not wholly clear are the causes for the localization of Californian focal culture on the lower Sacramento. On the lower Colorado the chief determining element evidently was the easy utilization of flood lands for farming, but fishing and facility of communication along the stream probably contributed. East of the Mississippi the cultures show little tendency to intensify on the lower courses of streams. There are in this region many rivers rather than outstanding ones, excepting the Ohio and St. Lawrence. But there were evidently other and obscurer factors involved besides relative stream size.

The Great Lakes did not succeed in attracting any notable cultures, for which their northerly position is only a partial explanation. They were evidently too large for successful native utilization, and smaller sheets such as Georgian and Green bays and Sault Sainte Marie remained the points which attracted most population. In general, settlements seem to have been on streams falling into the Great Lakes rather than on their very shores. The relatively dense population west of Lake Michigan is to be attributed to a combination of the many small lakes, the wild rice, the mixed character of the general plant cover, and the satisfactory maize-farming possibilities.

### Drainage

Drainage areas ought also to be considered at least briefly. Basically, of course, they express geology rather than distribution or supply of water. But, also obviously, they do not conform at all regularly with the recognized physiographic areas reviewed in Section XII. Successive levels of a drainage may include coast plain, interior plain, and the flanks of several mountain systems. Geological structure, as embodied sometimes in a very long history, is the primary factor in the production of physiographic areas. Erosion is the next most important. The extent of a drainage system is determined by these factors, but remains a geographical rather than geological expression of them.

Both speech and culture show some tendency to conform to drainage areas; but this brute fact seems to mean primarily that conditions tend to be more uniform, and communications easier, within a basin. Where drainages are connected by nearly level country, they are often rather similar to each other in speech or culture or both, even where the distances involved are great: Orinoco and Amazon, for instance, Mississippi and Great Lakes, Indus and Ganges, Vistula and Dnieper. Conversely, where the course of a stream is so long that it flows through markedly different altitudes, climates, and vegetations, the cultures along it are likely to differ fundamentally. The Nile, Danube, and Amazon are obvious examples. It is difficult to see how the situation of a culture in corresponding parts of one rather than another drainage could of itself affect culture. The culture adaptation must be primarily to the factors most relevant to the culture, such as plant cover or perhaps climate; and to these, drainage areas as such are not necessarily fundamental.

When larger culture and speech groups characterize drainage areas, it is usually "typically" rather than exactly. The Shoshonean language and Basin culture of the Great Basin serve as an example. The speech as well as the culture extend both northward into Columbia and southward into Colorado River drainage. The interior drainage area of the Great Basin is only the heart, the characterizing portion, of the total territory covered by the culture and language. And it will be recalled that in both physiography and plant cover the same thing holds: the Basin-and-Range province and the Sagebrush Semidesert area also center in the great landlocked Basin, but stretch out into Columbia and Colorado drainage. It is of secondary moment to geological structure and vegetation, as well as to human activities, where the available water of an area comes to rest. How much water there is, how it is distributed, and how it functions, are of far more significance from all these otherwise so diverse points of view.

This case seems typical. I add another: the relation of the Penutian languages to the Great Valley of California.[4] The great mass of this drainage system was held by Penutian tribes. The territory within it which they did not occupy was rather neatly compensated for by holdings without. It is also observable that most of the non-Penutian areas in the drainage were at its remote ends; the outside Penutian occupations lay on the coast about the mouth of the system. Further, the central floor of the valley was undiluted Penutian; and it was among these valley tribes that the Californian culture was developed furthest in its characteristic forms. So far, everything points to a correspondence. But five territories inside the drainage were non-Penutian, and four outside were Penutian. More than half the watershed did not coincide with the Penutian–non-Penutian boundary. The conformity is thus very far from close in detail. It was the presence of large rivers themselves, of bordering marshes, of stretches of broad valley and adjacent rolling hills, and the kind of vegetation supported by these, that primarily grouped and affiliated the population. Where the drainage ultimately headed and discharged was evidently of no particular consequence in influencing the development of culture and speech.

In one respect drainage is often a good indicator: of tribal boundaries. Except where streams are very large and the country of relatively uniform height, watersheds and not rivers tend to form native ethnic or political frontiers. This is expectable. The headwaters are usually the least habitable and valuable parts of a territory. Native settlement, being on the whole extremely light, concentrated in the valleys and along larger streams. The uplands were hunted in, visited, and claimed, but actually little utilized. Since frontiers were therefore unimportant, they tended to remain vague or general, and were not literally demarked. Crests and watersheds, which are almost always easily observed, thus sufficed. The divide might be a high range or a spur between tributaries; the principle was the same. The chief exceptions occur where uplanders are contrasted with lowlanders; and here of course the alignment is without reference to drainage—rather than violating it by a partition according to sides of a stream.

---

[4] Map 34 in Handbook of the Indians of California, BAE–B 78:350, 1925.

In a similar way, culture boundaries not infrequently follow watersheds. But, cultural groups being usually much larger than tribes, it is generally only pronounced ranges that serve in this way—especially the Rockies and main Pacific Coast systems.

## XIV. AGRICULTURE

It seems worth while to bring together the various inferences relating to agriculture which have been made in several connections in this work. The present section thus contains no new material, but recapitulates the principal findings and arguments advanced in regard to the place of farming in native life.

Although there is no specific evidence whatever to shake faith in the belief generally held, on botanical as well as cultural grounds, that New World agriculture had its essential origin in the tropics, there is reason to doubt two views sometimes advanced in connection therewith, namely, that the origin took place in cool uplands and even in regions so arid as to call for irrigation. The ultimate evidence on both points is likely to be botanical. But meanwhile the following needs to be remembered. In the Maya region, where a probable consecutive historical development has been traced back farther than elsewhere in the Americas, the lowlands grew all the plants utilized in native agriculture, the highlands only some. And the basic plant, maize, apparently was as fundamental in economy in the one region as in the other. It is only plants introduced by the Spaniards that are restricted to the uplands. The classical high-intensity civilization of the Maya proper, as distinct from the marginal and simpler cultures of the highland peoples, has had, as far back as we can actually follow it, a tropical rain-forest habitat. While these statements apply to the Guatemala-Yucatán area, they constitute some presumption that conditions were similar elsewhere in culturally nuclear America.

As to irrigation, I endorse fully Sauer's view that there is little evidence that irrigation was of basic importance anywhere in Mexico, in pre-Spanish times, and that it is erroneous to speak of maize culture as having flourished most in arid or subarid regions in that country. The rainfall is normally ample in practically all districts which farmed. Where it is deficient, we find vast tracts that were nonagricultural. What is characteristic of most of Mexico is the concentration of the rains into the summer months. The natural vegetation therefore tends strongly to the xerophytic, and much of the country looks desert at least half the year. But the rainfall comes in the growing season of maize—and of the other cultivated plants—and is accompanied by both sunshine and heat. This makes ideal conditions for raising maize, without irrigation. That in favored localities bottom lands were utilized for exceptionally heavy crops, or for two yields a year, does not affect the fundamental picture of the situation.

On the Mesa Central, and south of it, farming was universal. North of it, or, to be more exact, north of the Pánuco and Santiago, farming was confined to two territories in the continent. One of these is continuous with the Mesa Central, the other detached from it by a great territorial gap. The former runs up the Pacific coast and along the Sierra Madre Occidental to the American Southwest, in a long but narrow strip taking in roughly Nayarit, Sinaloa, Sonora; the adjacent mountain parts of Zacatecas, Durango, and Chihuahua;

and eastern Arizona and western New Mexico,—with a slight extension, at one time, into Utah and Arizona. The second area comprises that part of the United States east of the western edge of the Mississippi lowland—more or less the hundredth meridian. Between these two farming areas was a nonfarming territory, everywhere several hundred miles wide, that commenced at the northern foot or edge of the Mesa Central and continued beyond the northern limits of agriculture. This intervening nonfarming stretch was much greater than has generally been recognized. It was not a mere transient gap in Texas. It was a vast area, broader than the Pacific Coast-Sierra Madre farming belt. It is therefore likely that the histories of the two agricultural regions north of the Mesa Central may have been quite separate, though deriving from a common origin.

The western region shows continuity of traits as well as of territory with central Mexico. It is an area of metate or slab grinding, and of tortilla or wafer bread. It is also an area of summer rains, and of winters that are either dry or cold. Within this region, farming was pushed to the limits of possibility. Near its northern end, the region is bordered on the west, in Sonora and peninsular California, by genuine desert; in American California, by a district of decisively winter instead of summer rains; to the north, in Utah and Colorado, by a too brief growing season between frosts for maize to be sure to mature. In most of the northern part, farming was difficult enough to force peoples either to give it primary attention, or to abandon it altogether, except as a sporadic luxury, and scatter over the country in a thin layer of population subsisting on natural resources. The result was a tendency, in the American Southwest, for ethnic groups to become either agricultural addicts like the Pueblos, with inclination toward concentration of residence, or "nomad" gatherers like many of the Athabascans, who were indeed attached to definite group territories also, but perforce ranged these seasonally and could occupy them only in limited numbers.

In the eastern United States, the Mexican and western slab grinding is replaced by mortar pounding of maize, and consumption of tortillas by hominy and prevailingly boiled messes. Coupled with the territorial discontinuity, these traits suggest a distinct history. A derivation of eastern farming from the Antilles is possible, but seems unlikely in view of the slight degree of resemblance of the two cultures as wholes. They have traits in common, but these are disconnected traits, and too small a part of the total. Besides, southern Florida, western Cuba, and the Bahamas evidently constituted low-level margins of the respective cultures of the eastern United States and the West Indies; in part they were even nonfarming. Essentially, therefore, eastern native agriculture remains geographically isolated, and the manner and route of its derivation unknown.

The place of farming in life was also diverse in east and west. The proportion of subsistence gained by farming may not have been very different; but the degree to which land was utilized was markedly different. In the east as a whole, only a fraction of 1 per cent of the arable land was actually cultivated, as compared with an unknown but surely higher proportion in the west, and possibly 20 per cent, rising probably to 50 or 100 in certain localities in central Mexico. The limitation of eastern agriculture was due neither to lack of land nor to indifference to the art, but to scantness of population, which in turn apparently rested upon social rather than economic habits,—probably, above all, chronic and persistent warfare. Nor is there serious possibility that farming was so recent among the eastern Indians at the time of discovery that it had not yet had time to increase population through enlargement of subsistence; rather the reverse: population was possibly heavier, and certainly more concentrated, some centuries before the discovery, in Mound Builder times. In fact, agriculture seems definitely to have increased warlikeness, through enabling tribes to survive in spite of systematic warfare. The northern hunting Indians of the east fought much more sporadically, and put less social premium on bravery. They would probably have starved promptly had they attempted to wage war like the Iroquois, Creek, or Dakota. At any rate, as the tables and summations show, the eastern agricultural Indians of the early historical period had an average population density which was only a fraction of that of the nonagricultural tribes of the Pacific coast.

On the other hand, they carried farming as far north as it could be practiced. When maize is grown where it has to mature in a hundred days from planting, its growers are no half-hearted dilettantes or novices. It can be inferred, therefore, that the introduction of agriculture was fully appreciated for its economic value by the eastern tribes, even though in the main they utilized it more as a means enabling them to carry on war with increased intensity than for accumulating wealth.

This was not the situation in the nuclear American regions from which agriculture reached the eastern United States. There war was indeed waged, but for conquest, and as part of a deeply rooted system of economic exploitation. This exploitation was made possible by a much heavier population, but in turn very likely was tempered to maintain or even increase the density of this population.

All in all, the eastern picture is that of an original hunting-gathering population too thoroughly occupied with subsistence problems to build up their arts or a consequential economic system above the subsistence level; later receiving agriculture, accepting it readily, and with its aid achieving some beginnings of organization and art in the Mound Builder period, perhaps because the influences that brought maize also carried stimuli or examples in this direction; but in the end, on account of territorial discontinuity and cessation of the influences, reverting to a condition which differed from their original one chiefly in that the addition of farming enabled them to put more energy and time into war.

If an origin from South America by way of the Antilles is excluded, three possibilities are left for the route of introduction of agriculture from Mexico to the eastern United States: eastward from the Pueblos down the Arkansas, Canadian, or Red rivers; northeastward along the coast of Tamaulipas and

Texas; or by sea from south of the Pánuco to the region of the mouth of the Mississippi. Against the first route is the fact that eastern pottery, art, organization, games, and cults show certain specific Central Mexican resemblances, but few if any specific Pueblo or Southwestern ones. That the two areas of agriculture now and then proliferated into contact is likely; but the cast of the cultures of the two regions is so different as to suggest that such contacts were sporadic and secondary. Against the Texas route is the fact that there seem to be no archaeological or ethnological indications, as there expectably should be, of a higher culture at some time occupying the Tamaulipas-Texas coast. There remains the maritime route, or as an alternative, a rapid overland, coastwise migration. These satisfy all known conditions of the problems even to the discontinuity of connections, but are open to the serious objection of being without a shred of positive evidence. If one could believe in the Smith-Perry theory of the treasure seekers, and in their being maize carriers, it would be a great help in this situation. At that, it looks as if Radin's startling assumption, in The Story of the American Indian, that the Toltec embarked at Vera Cruz for New Orleans to found the Mound Builder civilization, might yet prove to be a genial inspiration. At least, there seems to be so little in favor of any other view, that we must keep our minds open to acceptance of this one if ever direct evidence in its favor crops up.

Undoubtedly significant is the fact that all North American farming dealt with no plants of any moment that were not Mexican, and lacked some—peppers and sweet potatoes, for instance—that are. It is, in a word, an abridged temperate-latitude copy of a tropical agriculture, to which no additions have been made. The Jerusalem artichoke and sunflower of the East are, technically, exceptions; but they seem to have been of no prime importance in the native economy. The Pueblo cotton and some of the Southwestern beans (the tepary *Phaseolus acutifolius* instead of *vulgaris*) look like local substitutions of hardy varieties. At any rate, they represent no thoroughly new addition to the agricultural inventory. Analogous is the substitution in the United States of native species of *Nicotiana* for the tropical *tabacum*. Not a single radically new plant of other than incidental consequence was added to native agriculture north of the Tropic of Cancer in a thousand to two thousand years of farming in the Southwest and a no doubt shorter but still lengthy period in the East. The historical dependence on nuclear America could not well be imagined as more strikingly exemplified. In the Old World, at least in its western half, many if not most agricultural origins seem to have lain in Mediterranean or subtropical trade-wind zone climates; in the New, in the tropics.[1]

---

[1] Sauer's recent American Agricultural Origins: a Consideration of Nature and Culture (Anthr. Essays, UC, 279–297, 1936) is a fundamental contribution, full of new views, many of which will almost certainly be generally accepted.

## XV. CULTURAL INTENSITY AND CLIMAX

THE EIGHTY-FOUR AREAS into which the continent has been divided in the foregoing discussion, and in map 6 and table 18, are cultural in the sense that, within each, culture is relatively uniform. Many of them also approximate natural areas; that is, they often possess one or more features, such as drainage, elevation, land form, climate, or plant cover, which also are relatively uniform over the tract, or alter at its borders. They are, further, historical areas, in that their relations with one another reflect currents or growths of culture, as soon as the areas are viewed not as equivalents but as differing in intensity or level. The ten or so larger culture areas hitherto customarily recognized differ from one another essentially in culture material or content; consideration of differences in level has usually been avoided as subjective or unscientific. The more numerous areas dealt with in the present work are in part based avowedly on culture intensity as well as content.

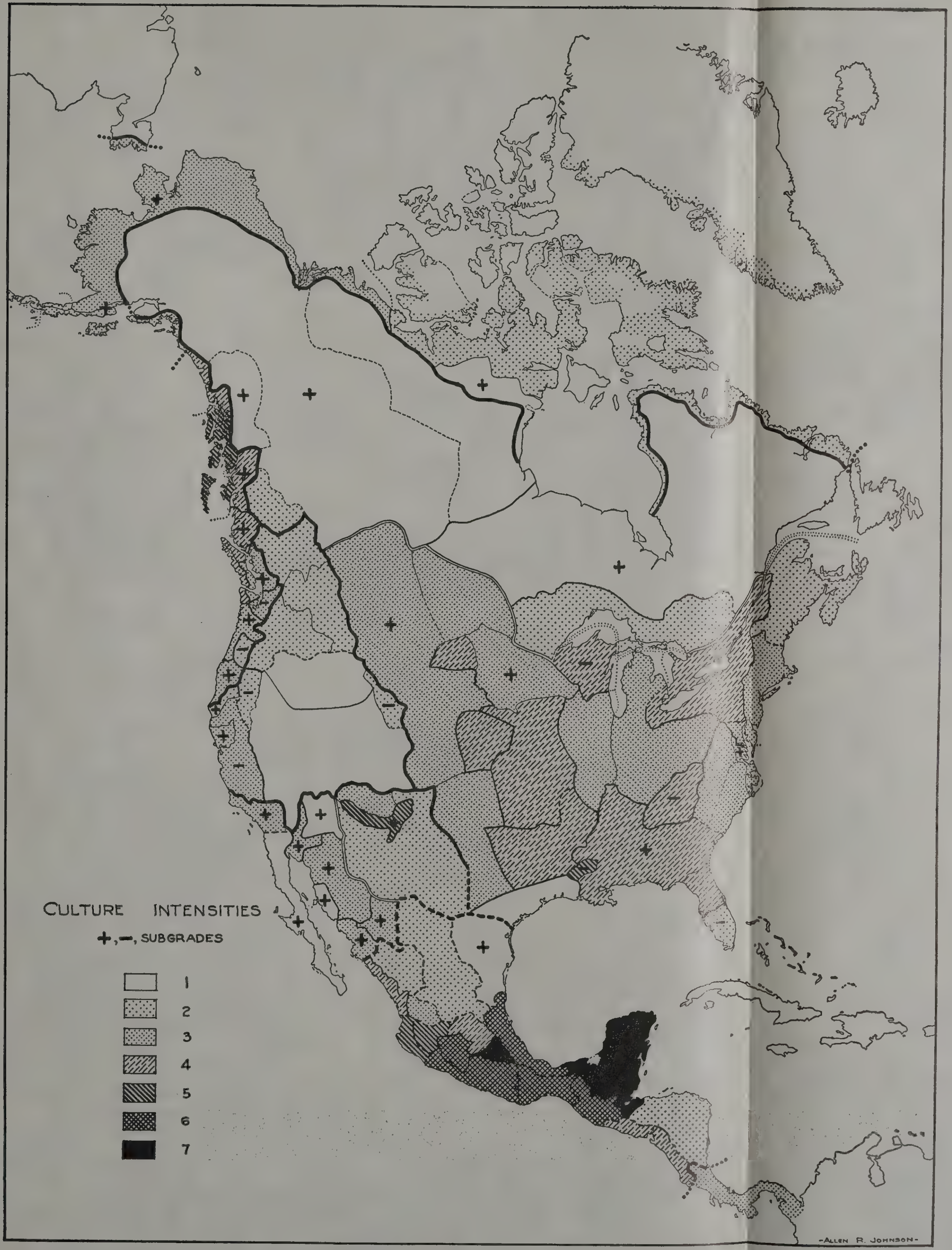
In practice, these two aspects of intensity and content cannot be rigorously separated. A precise calendar system, a complex interrelation of rituals or social units, invariably embodies special culture material as well as intensity of its development and organization. Simple culture material cannot well be highly systematized; refined and specialized material seems to demand organization if it is to survive. What we call intensity of culture therefore means both special content and special system. A more intensive as compared with a less intensive culture normally contains not only more material—more elements or traits—but also more material peculiar to itself, as well as more precisely and articulately established interrelations between the materials. An accurate time reckoning, a religious hierarchy, a set of social classes, a detailed property law, are illustrations of this.

Granted this interdependence of richness of content and richness of systematization, it should be possible to determine an approximately objective measure of cultural intensity by measuring culture content—by counting distinguishable elements, for instance. This is a task which no one is yet ready to perform for the continent; but theoretically it is feasible; and it might be worth while. Wider historical conclusions can hardly be formulated without consideration of intensity factors. Permanent neglect of these will tend to limit investigations to narrowly circumscribed regions and periods, or to abstract consideration of processes as such.

Each of the six major areas here dealt with, except that of the Eskimo,[1] shows at least one climax or focus of cultural intensity—even the Intermediate tract possesses a low-grade one in California. These climaxes, though not indicated in map 6, have been discussed in the text. Map 28 is a provisional attempt to go farther by representing various degrees of culture intensity. Primarily, the grades indicated are intended to show differences between unit areas lying within the same major area; but in an approximative way they also suggest

---

[1] Eskimo culture is probably richest on the Bering Sea, but it is also most mixed there with content of presumable non-Eskimo origin, and least specialized to "purity," so that indication of the Bering Sea geographical area as the Eskimo climax point would mean something different from what is meant in the other areas.


CULTURE INTENSITIES
+, −, SUBGRADES
1
2
3
4
5
6
7
ALLEN R. JOHNSON

Map 28. Intensities or "Levels" of Native Cultures, by Areas. Subgrades are indicated by plus and minus signs. There are as yet not generally recognized objective criteria for judgments of the kind expressed in this map, yet they are often rendered by ethnologists either approximately or implicitly.

relative differences of culture intensity between units lying in distinct major areas. The several assigned grades of intensity have been indicated also by corresponding numerical symbols in the comprehensive list of areas, table 18. Map 28 pretends to no more than a personal estimate. Yet by the method of counting culture elements that have index value for systematization, it should prove possible, after sufficient analysis, to prepare a more objectively founded table or map of the same purport.

In general, a culture climax or culmination may be regarded as the point from which the greatest radiation of culture material has taken place in the area. But it is always necessary to remember that as a culture becomes richer, it also tends to become more highly organized, and in proportion as its organization grows, so does its capacity to assimilate and place new material, whether this be produced within or imported from without. In the long run, accordingly, high-intensity cultures are the most absorptive as well as the most productive. It is by the interaction of both processes that culture culminations seem to be built up. Consequently, an unusually successful degree of absorption tends to lead to further "inventive" productiveness and outward influencing, and so on, until the process fails somewhere and a condition of stability is reached or a decline sets in; or a newer center begins to dominate the old.

On the whole, accordingly, it can be assumed that culture climaxes are not mushroom growths; though their finest flowerings are evidently brief, and the introduction of a radically new subsistence mechanism, such as agriculture or the horse, may occasionally cause a rapid growth. Where there is no evidence of such fundamental economic introduction, it may be taken for granted with a reasonable degree of assurance that a climax in the historic period was also a climax, or at least subclimax, in the later prehistoric period, and probably at least of fairly high level of intensity before that. Maya, Aztec-Toltec, Southwestern archaeology, in general that of the continent as a whole, confirm this assumption.

Archaeology does indicate some minor shifts of climax area: of the Maya from the base to the tip of the Yucatán Peninsula, of the Pueblo center from San Juan to Little Colorado and upper Rio Grande drainage. Analogous to these is the hypothetical northward movement of the Northwest Coast culmination. On the whole, however, these shifts are of small range. The only region of the continent in which there is evidence of a large-scale culture recession is the Ohio Valley. Even here the lowering of culture intensity from the prehistoric to the historic period seems not very great; and the whole eastern major area of which the Ohio Valley forms part is the one whose historic climax is the least.

Of all the greater currents in American prehistory, that which brought stimuli of Mexican origin to the region of the Mississippi and Ohio is the most obscure, on account of the unusually low-level cultures intervening in Tamaulipas and Texas. The Southwest is more evenly linked to central Mexico by tribes like the Opata, Tarahumar and Cáhita, Sinaloans and Cora. At any rate, agriculture is continuous from the Southwest to central Mexico; discontinuous from the Southeast. The Northwest Coast seems so free, relatively, of specific Mexican influences that its culture, beyond many general American elements, is readily construable as a reworking primarily of Asiatic and possibly Oceanic stimuli. It therefore presents quite different problems. The most satisfactory hypothesis to explain the more intensive eastern culture is that this was due to the same influences which introduced maize agriculture, presumably from Mexico; and that with the introduction of this fundamental subsistence factor, all cultural values shifted, and there ensued a period of unsettlement and activity, during which now this and now that local center forged ahead. Gradually, however, cultural productivity or "creativeness" diminished in these minor climaxes and became more evenly diffused, owing presumably to the fact that Mexican relations never became established as something direct and continuous. Since no region in the area thus had a first monopoly of culture import nor continued to have its intensity reënforced by maintenance of contacts with the high center, the result was a gradual leveling, along with sporadic retention here and there of this or that introduced element. Some slight precedence still remained, until early Caucasian times, in the region where it seems inherently most likely that the introduction of maize first occurred—about the lower Mississippi; but even this was waning.

The opinion of the early French observers that the Natchez represented but the remnant of something greater is, then, perhaps not wholly unfounded. With reference to what has just been said about culture content and organization, the Natchez make the impression of having possessed a type of organization more developed than the simple content of their culture as a whole called for. The material of this culture, its arts, war customs, ritual elements, was only barely distinguishable from that of Muskogi culture; the conscious emphasis put on the system of social values appears to have been perceptibly greater. It has always seemed a problem how such a system could develop from the inside, spontaneously as it were, among a small ethnic group. It is much easier to see it as a survival from a time, perhaps that of the Mound Builders, when the content of the culture was also richer.

In a measure, the same type of situation appears to be true of the Pueblo climax. Pueblo culture material of the historic and late prehistoric period, to be sure, remained relatively rich as compared with earlier prehistoric times—perhaps even continued to increase; but one has an impression that its organization was still more preponderant.

On the Northwest Coast the reverse seems to hold. The patterns of the culture are definite enough, and the impulses toward organization obvious. But no single consistent scheme appears to have been evolved. Everything is rated and regulated, and yet there is no real system. Active production of culture material was evidently going on, but the attempts toward its organization were still vigorous rather than successful.

Northwestern climax culture then was in the ascendant phase and nearing its culmination; Southwestern and Southeastern were declining—the former slowly, owing to long intrenchment of its system and perhaps partial maintenance of exposure to Mexico; the latter, never firmly established nor well connected with its fountainhead, already almost at the bottom of the descent. Reference is to culminations: the general level of the culture of an area may well rise while that of its climax sinks.

In Mexico, Aztec and Maya civilizations in 1500 A.D. evidently contrasted in a parallel manner: the one probably in the ascendant, the other surely declining.

If it ever proves possible to find some objective measure of culture intensity other than indicators chosen from among its contents as suggested above, the relative strength of the two factors of cultural evolution and devolution would be computable, and the history of nonhistoric peoples and cultures could be better projected than now when feeling or intuition is our chief guidance.

Parallels with historic civilizations suggest themselves. Wherever one of these attained a clearly recognizable culmination, this seems to have corresponded essentially with a period of successful organization of culture content—organization in part into a conscious system of ideas, but especially into an integrated nexus of styles, standards, and values. Before the culmination, the absorption or development of culture material was apparently outstripping its organization into new values, as in Greece from 800 to 500 B.C. At the culmination, organization overtook and mastered content: the value system of the culture was set. After the culmination, there followed a period at first usually of continued production or assimilation of material, but this soon slackened, while organization, though more and more limited to revision or perpetuation of the value system, continued to be maintained: as in Greece after 200 B.C.

Ancient Egypt is now well enough known to show the same cycle in outline. The specific developmental process must have been under way by 4000 B.C. The culmination was reached soon after 3000, perhaps around 2600. After that, consolidation prevailed. This brought its benefits, and the greatest realm extension, wealth, and perhaps population, were not attained until 1500. New culture material also continued to be taken in and assimilated: bronze, iron, the horse, and so on. But the standards and values had been essentially settled on by about 2600, and altered relatively little after that. Art, writing, architecture, religion, remained cast in the familiar molds. These molds largely survived the political breakup after 1100, and the first foreign conquests. Even Greek domination did not more than partly obliterate the old patterns, and it required several additional centuries of strong Roman and Christian influence, in part even the Arab shock, to reduce the obsolescent survivals to extinction.

Flinders Petrie[8] has gone so far with the concept of cultural cycle as to try to determine the respective moments of culmination of the several aspects of a number of civilizations, and to derive from these a recurrent pattern. Climax attainment in sculpture precedes that in painting, for instance, literature also comes early, science and wealth reach their peaks late in each cycle, he argues, specifying both achievements and dates for each civilization. He is at times so peremptorily immediate in his judgments, and so individualistic in his chronology, that his essay has won little following. Even in those who might be interested in his idea, distrust has probably been aroused by the drastic handling of facts. Nevertheless, art or literature or both do seem to culminate earlier than mechanical science, wealth, and population in the Egyptian, classic Mediterranean, and Occidental civilizations, probably in Chinese, Indian, and Mesopotamian also, and there is no clear example of a reversal of order. The indication thus is that Petrie may have got some hold on a general principle of culture growth.

---

[8] The Revolutions of Civilization, 1911.

In native America both literature and science were relatively undeveloped and are imperfectly known. Art, however, attained to some high developments, and its recovered specimens have generally been sedulously preserved. It is possible, therefore, to take this part of Petrie's scheme—that the culmination of art tends to come early in the cycle of a culture—and to test it against the inferences on developmental phases reached on other grounds in the foregoing pages. In short, the hypothesis, based on precedent in the Old World, is that a culture with a flourishing art would still be in the ascendant phase; one with a decaying or dead art, at its peak or in the descendant.

The Maya culture fits perfectly. All the known great sculpture of highest fine-art value comes in the Old period, before 600 (or 900) A.D. by the usual reckoning. The semigeometric architectural decoration, the Toltec-influenced reliefs and frescoes of Chichen, the codex illustrations of the Late period cannot begin to compare in quality with the Old Maya art. And yet calendar, script, religion, architecture, kept their essential forms most of a thousand years longer.

In the Valley of Mexico and environs, decision upon what is earlier and later among many pieces of art is more difficult. There may have been successive and more or less discrete cycles of Toltecan and of Aztecan period. Still, one would be inclined to doubt the essential separateness of these on the same spot: Old World precedent is too uniformly to the contrary. With the two periods reckoned as parts of one culture growth, we have left, in sculpture, a number of specimens that can be pretty positively assigned to each. Among these, precedence in aesthetic merit almost certainly goes to the "Aztec" examples. This culture, then, by hypothesis, would still have been in or near the ascending phase at its discovery.

The lesser Mexican cultures like the Zapotec and Totonac are too little known so far as time development is concerned to make their discussion in this connection profitable. To pass to South America, however, we have in Peru a partial fit to theory. The Late or Inca culture was evidently the richest attained there, in totality of content as expressed by number of inventions or known devices. Quipu, balance, roads, suspension bridges, bronze, for instance, are either Late only or not known to be Early. Easily the best sculpture, however, is that of Tiahuanaco, the probably still earlier sculpture of Chavín, and, if clay modeling be included, the pre-Tiahuanaco Early Chimu pottery. All these date long before the Incas. This is not a wholly comparable illustration, because the Early cultures in which the arts culminated were markedly local or provincial, Inca culture essentially pan-Peruvian. It is conceivable that this Late civilization marked the beginning of a new era on a wider areal basis, and that this was still so new that its pure art had not begun to develop. This suggestion, however, leads to a number of counterconsiderations, which are too complicated to follow up here. It does remain a fact that Inca sculpture is inferior to the best Early Peruvian sculpture, and that where a local art, like that of Chimu pottery, can be traced consecutively, the summit of aesthetic quality is Early, whereas variety, elegance, and geographical spread culminate in Late times.

In the Southwest, plastic and pictorial art never reached even moderate achievements, but the history of pottery is well known. The finest types are generally considered to be the Mimbres and Sikyatki wares; with which some would rank certain of the San Juan black-on-white styles. These all fall in Pueblo period 3 or early 4. Post-Spanish wares are generally deteriorated, except for very recent Caucasian-stimulated renaissances. This accords with the general recognition of period 3 as the Great Pueblo period—great with reference to its values. In quantitative richness of total culture content, periods 4 and 5 perhaps equal or surpass it: for instance, there are no positive indications of masks in the prehistoric periods; and it is hard to believe that any ancient town maintained rituals so elaborately organized as those of modern Zuñi. The content and system of the culture have been well maintained; its best art has been dead several centuries. Here, then, is another illustration of fit to hypothesis.

In eastern North America art was at a low level at the time of discovery. The finest specimens all seem prehistoric: pottery trophy heads in Arkansas, incised shell gorgets from about Tennessee, Hopewell culture ornaments of copper, mica, and bone in Ohio. None of these productions rises to the level of a great art; but a number evince both skill and feeling in a definite, rather unique style. This agrees with the interpretation, advanced above, of Mississippi Valley culture—as a growth that reached its modest peak some centuries before Caucasian advent, and had then spread and shallowed, with fragmentary persistences like those among the Natchez. These, however, were essentially organizational and unaccompanied by aesthetic productivity. The somewhat scattered and diverse art achievements point to provincial and transient flowerings.

Northwest Coast art, on the other hand, was fairly flourishing when discovered, and was evidently stimulated to higher quality by its first Caucasian contacts. The archaeological remains in the area are cruder and none of them shows the full style of the historic period. To be sure, they are rather scant; but in view of the unanimously simple quality of such specimens as there are, their fewness itself argues a lack of aesthetic vigor. Here, then, an active and successful art exists in a culture which on other grounds has been construed as still in its growth phase.

The tantalizing and fundamental subject of cultural periodicity can hardly be pursued farther here, for a variety of reasons, among them the outstanding one that the exactest determinations of cycle can obviously be made best on datable and therefore documentary materials. What I have tried to show is that both in art and in degree of systematization the more outstanding American cultures seem to conform to a general pattern of cycle the outlines of which gleam through the known historic civilizations. Further, the very concept of climax, or, if one will, culture center, involves not only the focus of an area but also a culmination in time. Through the climax, accordingly, geography and history are brought into relation; or, at any rate, the areal and temporal aspects of culture cannot be really related unless consideration is accorded to climax. This view has guided me in the present work; which in turn, I trust, validates the view by its concrete exemplifications.

# INDEX

# INDEX

Abbato-tine, 57, 100, 196
Abnaki, 61, 93, 94, 97, 133, 142
Acaponeta, 118, 123, 126
Acaxee, 120, 124, 125, 126, 128, 178, 200
Achomawi and Atsugewi, 51, 52, 57, 155, 190, 201, 207
Acoma, 133, 211
Acorn, 3, 53
Adobe, 33, 122
Agave, 38, 44, 122. *See also* Maguey; Mescal
Age-and-area principle, 4, 21
Agriculture, 13, 41, 42, 44, 46, 52, 61, 67, 70, 71, 85, 89, 96, 123, 129, 142, 145, 149, 176, 203, 210, 211, 212, 214, 221, 223, 224; Pueblo, 46; tribes and, 77, 78, 83, 84, 146; areas and, 96, 142, 145, 172; maize, *see* Maize; Eastern, 146 ff., 219, 220; place of, in life, 147; effect of, on population, 148, 149; hunters, 150; in northwest Mexico, 161; origin of, 164, 219, 221; spread of, 179; introduction of, 220, 224; inventory, 221
Ahome, 39
Ahtena, 100
Aivilik, 22
Akwa'ala, 41, 43
Alabama-Koasati, 65, 66
Alaska, 15, 21–27 *passim*, 55, 96, 99, 142, 157; Eskimo, 134, 157
Aleut, 25, 26, 44; population, 134, 135, 157; language, 175
Algonkin(s), 81, 86, 87, 91, 94, 95, 145, 171, 176, 194, 195; areas, 61, 64, 90, 93, 96, 184; languages, 97, 173, 175
Alsea, 133
Altar(s), 32, 33, 44, 77
Altar River, 39
American Southwest. *See* Southwest culture
Anahuac Desert Plateau, 197, 199
Ancestor impersonation, 32
Anglo-American culture, 109
Anglo-Saxon America, 161, 164, 166
Antillean culture, 67, 69, 70, 219, 220
Apache, 35 *passim*, 37, 41, 48, 75, 79, 84, 100, 142, 188; habitats, 38, 159; Eastern, 36–38, 79–80, 87, 179; Western, 36–38, 129, 179; Kiowa, 79; Mexican, 119; on the United States frontier, 124; population, 133, 152; distribution, 187
Apalachi, 63, 65
Apalachicola, 65, 145
Appalachian Summit culture area, 95, 141
Appalachian System (range), 66, 92, 93, 95
Arapaho, 47, 77, 78, 80, 82, 83, 84, 97 *passim*, 133, 188; language, 173, 188
Archaeology, 101 ff., 106, 109, 110, 112, 116, 122, 123, 126, 148, 151, 176, 183, 211, 223, 227
Archaic period, 117
Architecture, 47, 109, 111; Maya, 226
Arctic, 21, 60, 86, 99, 100, 134, 135, 142, 143, 145, 169, 170, 172, 213
Arikara, 83–87
Arivaipa, 36
Arizona, 33, 35, 36, 43, 129, 178, 211, 219; northwest, 41–42, 136, 152
Arkansas: headwaters, 83; pottery trophy heads, 227
Armor, 28
Art, 91, 106, 227
Asiatic: influences, 21, 24, 27, 28, 31, 156; people, 115; culture elements, 157; intrusions, 172
Assiniboin, 80, 81, 83, 84, 86 *passim*, 87, 133
Atai-kutchin, 196
Atakapa, 63, 64, 70
Athabascan(s), 24, 28, 35, 38, 57, 80, 83, 84, 86, 95, 96, 99, 101, 126, 145, 153, 171, 173, 189, 192, 193, 194, 195, 219
Atlantic, 57, 60, 67, 92–96 *passim*, 101, 102, 105, 109, 140, 141, 145, 172, 185, 195, 197, 200
Atlatl, 50, 51
Atsina (Gros Ventre), 77, 78, 80, 81, 84, 86, 133
Atsugewi. *See* Achomawi
Axes, stone, 123
Aztatlán, 118, 126
Aztec(s), 115–117, 119, 120, 124, 127, 223, 225, 226
Aztec-Tanoan speech, 34

Babine, 99, 100, 196
Back River, 21
Baffinland, 22, 23, 157
Bahamas, 67, 69, 219
Baja California tribes, 159, 178, 193
Balance, 226
Ball courts, 111
Banana, 112
Bannock, 49, 51, 57
Barley, 112
Barnet, H. G., 30 n.
Basin. *See* Great Basin.
Basin-and-Range provinces, 33, 42, 51, 188, 190, 197, 201, 216
Basket Maker, 45, 46, 50, 151, 206
Basketry, 24, 42, 50–55, 74, 82
Beads, 56, 80
Beals, Ralph, 32, 40 n., 119, 121, 128, 128 n., 129, 130
Beans, 112, 146, 150, 221

Bear Lake groups, 100
Beauchamp, W. M., 9
Beaver (tribe), 100, 195
Bella Coola, 133
Bennett, W. C., 40 n.
Beothuk, 97, 171, 175
Berendt, 112–113
Bering: Sea, 21, 26; Strait, 23, 27, 147, 157
Berreman, J. V., 11
Berries, 78, 146
Big Horn: River, 82, 188; Mountains, 86
Biloxi, 63
Birch-bark vessels, 101
Bird spear, 23
Birket-Smith, K., 25, 27 n., 29 n.
Bison, 36, 37, 70, 75–79, 82, 83, 85, 87, 88, 149
Blackfoot, 49, 77, 80–82, 84–88, 173, 175, 195
Blackfoot-Blood-Piegan, 81, 84
Blood (tribe), 80, 81
Boas, Franz, 1, 4, 9 *passim*, 25 n., 30 n., 51 n., 56 n., 84 n., 213
Boothia Peninsula, 21, 23
Boyle, David, 9
Brand, D. D., 47 n., 111 n., 118, 122, 122 n., 123 n., 124 n., 211
Brazil, 166
Bridges, 226
Brinton, D. G., 109, 124
British Columbia, 56, 99, 133
Bronze, 226
Bulb digging, 49
Burials, 105
Buschmann, J. K. E., 124
Busk, 62

Cabeza de Vaca, 70
Cacao, 112
Caddo, 63, 64, 74, 75, 76, 86
Caddoan(s), 74, 75, 79, 86, 133, 173, 183, 187
Cadzow, D. A., 9, 100
Cáhita, 32, 38–40, 121, 123, 126, 127, 159, 177, 200, 223
Cáhita-Opata-Tarahumar, 125, 127
Cakchiquel, 110, 114
Calendar, 111, 112, 117, 120, 222, 226
California, 44, 50–55, 60, 76, 153 ff., 159, 169, 179, 193, 215, 216, 219; peninsular, 33, 41, 43, 124, 137, 144, 159, 178, 200, 219; southern, 44 ff., 53, 54, 137, 153, 173, 193; climate, 59, 207, 211; population, 132, 134, 137, 138, 143, 152–155, 159, 178–181; agriculture, 211
California-Great Basin culture area, 49
California-Northwest Transition culture area, 55, 138, 192
Calusa, 64, 183
Canada, 15, 109, 187; population, 134, 167; physiographic areas, 193 ff., 202
Canadian Intermountain Plateau, 196
Canadian Pacific Mountain System, 196
Canadian Prairie: subarea, 79, 86; Northern, 139
Canadian River, 86, 220
Cape Flattery, 176
Cape Hatteras, 93
Cape Mendocino, 28, 175, 192
Cape San Lucas, 44
Captive: sacrifice, 62, 74; torture, 62. *See also* Torture
Carey, H. A., 47 n., 122 n.
Caribou, 20–23, 27, 96
Caribou-eater (tribe), 99, 100, 194
Carolina Sound culture subarea, 94, 141
Carrier (tribe), 56, 57, 99, 100, 196
Carving, 23, 24, 28, 67, 115
Casa Grande, 153
Casas Grandes, 37, 38, 40, 45, 47, 122
Cascades, 57, 78, 191, 192, 204
Caso, A., 115 n., 119 n.
Catawba River, 94
Cattle, 161
Caucasian: culture, 35, 43, 45, 90; imports, 44; contacts, 45, 87, 90, 105, 131, 148, 227; settlement, 57, 71, 78; absorptions, 62, 95; influences, 86, 149; encroachments, 87, 92, 155; relations, 92; times, 224
Cazcan, 124–127
Centispac district, 118, 126
Central Lowland culture area, 89, 185, 187, 202
Central Maritime culture subarea of Northwest Coast, 29, 31, 135, 155, 191, 192, 196
Central Mexican culture, 32, 40, 123, 200, 221
Ceremonies, 24, 30, 54
Chaco district, 211
Chalchihuites, 128, 129
Chametla, 118, 123, 126
Chañabal, 113, 114
Chatot, 65
Chavín culture, 115, 226
Chemehuevi, 43, 52, 190
Cherokee, 5, 62–66 *passim*, 95, 149, 155, 184, 212
Chesterfield Inlet, 21, 23, 26
Cheyenne, 47, 76, 80, 81, 82, 84, 87
Chiapas, 110–112, 197, 201
Chibchan speech, 109, 110
Chichen, 226
Chickasaw, 62–66 *passim*, 133, 145, 184
Chicomuceltec, 113, 114
Chihuahua, 33, 36, 40, 45, 47, 122, 124, 178, 208, 218
Chilcotin, 56, 99, 100, 196
Chile, population, 166
Chili, 112
Chimakum, 173

Chimu culture, 115, 226
Chinook, 133, 142, 156
Chipewyan, 100, 194, 195
Chiricahua, 36
Chitimacha, 63, 64, 145, 183
Chiwere, 85, 86, 91, 186
Choctaw, 62–66 *passim*, 133
Choctaw-Chickasaw language, 65
Chol, 111, 114
Cholula, 116
Chontal, 111, 114
Chorotega, 110, 114
Chortí, 111, 114
Chugachigmiut, 157
Chuj, 113, 114
Chumash, 44, 193
Chungichnish cult, 44
Churchill River, 97
Cinaloa, 39
Climate, 13, 26, 33, 50, 59, 60, 69, 71, 116, 129, 189, 190, 200, 207 ff., 218, 221, 222
"Cloisonné" pottery, 122
Clothing, 23, 77, 101
Coahuila, 130
Coahuiltec, 70, 119, 124, 126, 130, 133, 159, 173, 200
Coast Ranges: Californian, 53, 54; Canadian, 99, 204,
Coatzacoalco, 116
Cochimí, 43, 44, 175
Cocopa, 42
Coffee, 112
Colby, C. C., 118 n., 200 n.
Cole, F. C., 107 n.
Colima, 118, 125
Collins, H. B., Jr., 27 n.
Colombia, 109, 110, 166
Colorado Plateaus, 33, 42, 188, 189, 190, 201
Colorado River, 37, 41, 142, 178; Lower, culture, 38, 42–43, 52, 137, 152, 154, 177, 190, 208; drainage, 45, 216; flood lands, 210, 211, 215; Little, drainage, 223
Columbia-Fraser: drainage, 28, 49, 51; three provinces of, 55–56; population, 134, 144
Columbia Plateaus, 55–59, 155, 188, 189
Columbia River, 57, 58; Lower, 30, 31, 136, 155, 192; drainage, 35, 55, 216; Middle, 56, 138, 188; Upper, 56, 138, 188
Comanche, 37, 47, 48, 79, 80, 84, 87, 187
Communication, facility of, 215
Concho, 32, 119, 120, 124, 125, 126, 129
Conchos River, 128, 129
Conestoga, 91–93 *passim*, 133
Conoy, 93
Cook, S. F., 178 n.
Cooper, J. M., 9, 97, 98
Copper, 91. *See also* Hopewell culture
Copper River, 24, 26, 100
Cora, 125, 126, 127, 177, 223
Coree, 145
Coronation Gulf, 21–24 *passim*
Cosalá, 126
Costa Rica, 109, 110
Costano, 193
Cotton, 32, 112, 117, 147, 150; Pueblo, 221
Coup counting, 56, 150
Coyotero, 36
Cree, 83–87 *passim*, 96–98, 149, 194, 195
Creek, 62–66 *passim*, 94, 105, 106, 133, 145, 149, 151, 155, 184, 220
Crow, 76, 77, 80–82, 84, 86, 175, 188
Cuba, 67, 69, 214, 219
Cuetlaxtlán, 116
Culiacán, 118, 120, 123, 126
Culture climax, 5, 30, 35, 44, 55, 84, 154, 222, 223 *passim*, 224, 225, 228
Cusabo, 65, 145
Cushing, F. H., 67, 67 n., 161
Cuyamacas, 44

Daho-tine, 196
Dakota, 76, 82–88 *passim*, 97, 133, 186, 212
Dall, Wm. H., 9
Dalles, The, 56
Datura cult, 44
Davidson, J., 56 n.
Davis, W. M., 182
Delaware (tribe), 61, 90, 93
Deschutes River, 51
Deuel, T., 107 n.
Dhegiha, 85, 86, 91, 186
Diegueño, 41, 43, 44, 142, 193
Diri, 100
Dogrib, 100, 195
Dorsey, J. O., 9
Dowling, D. B., 193, 194
Dreaming, 42
Driver, H. E., 52 n.
Drucker, Philip, 30 n., 43 n., 44 n., 52 n.
Durango, 122–124, 128, 218

Earthworks, 91
Eastern Lake physiographic area, 89
Ecology, 20, 22, 23, 33, 45, 63, 69, 70, 96
Ecuador, 110, 214
Eel River, 28
Eggan, F., 37 n.
Ejutla, 115
Erie (tribe), 91, 184, 185
Erosion, 215
Eskimo, 4, 20–27 *passim*, 60, 76, 96, 98, 101, 134, 135, 142, 143, 145, 156, 157, 167–169, 171, 175, 194, 213, 214, 222
Esselen, 193
Etchao-tine, 57, 100, 195, 196
Etla, 115
Evaporation, 33, 71, 211
Exogamy, 62
Eyak, 29 n.

Faraones, 37
Farming, 41, 46, 74, 75, 81, 83, 89, 92, 121, 129, 142–153 *passim*, 164, 176, 179, 189, 190, 196, 198, 205, 211, 215, 218–221
Feather-stick offering, 54
Fenneman, N. M., 182 ff., 187, 193, 194, 197
Festivals: first maize and harvest, 74; property distribution, 157
Fewkes, J. W., 67, 67 n.
Fire, 13
Fire temples, 62, 74
Firearms, 62, 84, 87, 90, 95
Fish, fishing, 44, 95, 146, 171, 213–215
Fishhooks, 44
Flathead, 56
Florida, 63, 65, 67, 70, 92, 139; South, culture area, 67, 69, 139, 144, 145, 183, 219
Flour, 96
Fonseca, Gulf of, 110
Footgear, 77
Ford, J. A., 103 n.
Fort Ancient culture, 106
Foster, A., 200
Fox (tribe), 85, 88, 89, 186
Fraser River, 30, 57, 99, 136, 141; drainage, 55, 56; culture area, 56, 138, 144, 196
Friederici, G., 60 n.
French: contact, 62, 75, 87; encroachment, 67; influence, 74; attitude, 92; discovery and settlement, 97; Colonial import, 101; observers, 224
Fuerte River, 38–39, 125, 127, 136, 177
Fur trade, 84, 95

Gabrielino, 44, 193
Gamio, M., 122 n.
Gates, W., 113 n.
Gathering, 49, 78, 151, 153, 186, 219
Gayton, A. H., 50 n., 52 n.
Georgia, 60, 64, 94, 105, 106
Georgian Bay, 214, 215
Gibbs, George, 9
Gifford, E. W., 36 n., 41 n., 43 n., 44 n.
Gila River, 37, 39, 42, 43, 47, 123, 126, 153, 177, 208, 211
Gila-Yuma-California sphere, 152, 153
Gileño, 36
Gitskyan, 196
Gladwin, H. S., 33 n., 47 n.
Gladwin, N., 47 n.
Gold, 67, 109
Goodwin, G., 36 n., 144 n., 179
Gower, C., 67
Grave monuments, 24, 157
Great Basin, 33, 42, 45, 54, 55, 176, 190, 216; Shoshoneans, 41, 46, 49, 52, 53, 57, 82; culture, 49–53 *passim*, 80, 82, 189, 208, 216; marginal subareas, 53; population, 137, 141, 143
Great Lakes, 63, 89, 96, 102; Lower, 91, 93, 101, 140; Northern, 96, 141; cultures, 215
Great Plains province, 187, 188
Great Slave Lake, 21
Great Valley of California, 53, 54, 191, 192, 216
Green Bay, 89, 215
Greenland, 21–23, 26–27, 135, 157
Grinnell, G. B., 81 n.
Gros Ventre. *See* Atsina
Growth, focal points of, 5, 6
Guachichil, 120, 124, 125, 126
Guadalupe, 71
Guale, 65
Guasave, 39
Guatemala, 110, 111, 117, 124, 157, 159, 161, 218
Guerrero, 116, 117, 200
Guillemin, E., 122 n.
Gulf Coast, 60, 67, 95, 145, 214
Gulf Coastal Plain, 197, 201
Gulf of California, 41, 178
Gulf of Georgia, 29, 31, 133, 135, 155, 156, 191
Gulf of Nicoya, 110
Gunther, E., 30 n.
Guzmán Basin, 36

Hacienda system, 150
Haeberlin, H., 9, 30 n.
Haida, 3, 133, 173, 176
Haines, F., 87 n.
Haisla, 57
Haiti, 67
Halchidhoma, 42
Halyikwamai, 42
Hamatsa ceremonies, 30
Han, 100
Hare (tribe), 99, 100, 195
Harpoon, 23, 44
Harrington, J. P., 80 n.
Harrington, M. R., 50, 50 n.
Harshberger, J. W., 14, 56, 63, 69, 71, 90, 96
Hats, 24, 28
Hatt, G., 21
Haury, E. B., 47 n.
Havasupai, 3, 4, 41, 42, 50, 142
Height of Land, 96, 97
Hemisphere, population of, 164, 165, 166, 179
Henequen, 112, 150
Herzog, G., 43
Hesi ceremony, 54
Hewitt, J. N. B., 133
Hidalgo, 116, 119
Hidatsa, 81, 83–87 *passim*, 91, 175
Hill, W. W., 144 n., 179
Hill-Tout, C., 9
Hitchiti dialect, 65, 66

Hodge, F. W., 9, 152
Hohokam, 33 n., 123
Hoijer, H., 37 n.
Hokan-Siouan, 173
Holmes, W. H., 67 n., 103 f., 107 f.
Hominy, 219
Honduras, 110, 111, 157, 159, 161
Hoods, 24
Hooton, E. A., 106 n.
Hopewell culture, 106, 227
Hopi, 34, 35, 41, 133, 173
Horse, 35, 37, 51, 56, 57, 75, 76, 78, 79, 80–85 *passim*, 87, 88, 90, 149, 208
Houma, 66
Houses, 23, 32, 33, 74, 82, 83, 87, 92, 101, 157
Howley, F. M., 47 n.
Hrdlička, A., 9, 122 n., 127
Huarejía, 39, 125
Huastec, 113, 114, 116, 122, 130, 175, 200
Hudson Bay, 27, 96, 171, 194
Hudson Valley, 211
Huichol, 125, 126, 127, 177
Humboldt, A. von, 160
Huntington, E., 129 n., 130 n.
Huron, 90, 91, 97, 133, 184, 195, 211, 212
Hutchinson, A. H., 56 n.

Iglulik, 22
Illinois, 90, 140, 151
Illinois-Ohio Valley culture area, 85, 90, 186
Imperial Valley desert, 147
Inca, 165, 166, 226, 227
Indiana, 89, 90
Indonesia, 28
Ingalik, 100
Intermediate-Intermountain culture area, 28, 59, 60, 78, 79, 86, 87, 99, 137, 143, 144, 188, 204
Intermountain-Athabascan culture, 28, 57
Iowa (tribe), 85, 86
Iroquois, 62, 95, 96, 133, 145, 149, 151, 155, 176, 184, 185, 211, 212, 220
Iroquoian(s), 61, 91, 92, 94, 106, 149, 173, 184, 186
Irrigation, 25, 33, 42, 163, 218
Irritila, 120
Isthmian culture area, 109, 110

Jacaltec, 113, 114
Jalisco, 117, 118, 120, 124, 125, 126, 128, 163
Janambre, 119, 124, 126
Jenks, A. E., 7, 9, 89
Jenness, D., 27 n., 99 n.
Jerusalem artichoke, 221
Jicarilla, 37, 48, 79
Jova, 177
Joyce, T. H., 214
Judd, N., 50, 50 n.

Kadiak Island, 24
Kalchana, 100
Kamchadal, 20
Kamia, 44, 142
Kaniagmiut, 134, 157
Kansa, 75, 85
Karankawa, 37, 70
Kashim, 23
Kasihta, 66
Kaska, 57, 100, 196
Kauita, 66
Kaweah River, 52
Kayak, 23, 24, 26
Kayu-khotana, 100
Kekchi, 111, 113
Kellogg, R. S., 14
Kelly, Isabel T., 11, 43 n., 52 n., 123
Kenai Peninsula, 24, 26
Keres, 34, 133
Kern River language, 173
Khnaia-khotana, 100
Kichai, 74
Kickapoo, 88, 90, 186
Kidder, A. V., 9, 33 n., 45, 46 n., 47, 50 n., 122 n., 132, 152 n.
Kiliwa, 43
Kings River, 52
Kiowa, 37, 47, 48, 79, 80, 83, 84, 86, 187
Kiva, 32, 33
Klamath Lakes, 52, 137, 190
Klamath River, 30, 31, 55, 136, 154, 155, 192
Klimek, S., 54 n.
Kniffen, F. B., 51
Kohuana, 42
Kootenay, 56, 173, 196
Kotzebue Sound, 24
Koyukon, 100
Krickeberg, W., 116 n.
Kuksu cult, 51, 54, 55
Kus, 133
Kuskokwagmiut, 134
Kuskokwim, 24, 27, 100
Kutcha, 100
Kutchin, 100, 101
Kwakiutl, 3, 133, 176
Kwitcha, 100

La Flesche, F., 75
La Plata drainage, 166
Labrador, 21, 22, 23, 98, 134, 157
Labrets, 24, 25
Lacandón, 111, 127
Laguna, 133, 211
Laguna, F. de, 29 n.
Lagunero, 119, 120, 124–126, 129
Lake Erie, 91
Lake Huron, 91
Lake Michigan, 85, 88, 89, 97, 186, 215
Lake of the Woods, 96, 97
Lake Ontario, 91

Lake St. Clair, 91
Lake Superior, 88, 97
Lake Winnebago, 89
Lamp, 23, 25
Land use, 147, 148, 175, 177, 187, 215, 219–220
Lapps, 20
Laramie Mountains, 86
Lehmann, W., 10, 110 n., 122 n.
Lemhi Shoshone, 51, 57
Lenca, 110
León, N., 117
Life-zones, 13, 54, 69
Lillooet, 56, 196
Linné, S., 214
Linton, R., 62 n., 74, 80 n.
Lipan, 37, 70, 79, 119, 124, 133
Litters, 62
Livingston, B. E., 14, 57, 69, 72–73, 89, 90
Llaneros, 37, 79
Lothrop, S. K., 109–110
Lovelock Cave, Nevada, 50, 51
Loven, S., 69
Lowie, R. H., 43 n., 49 n., 76
Luiseño-Cahuilla, 193
Lumholtz, C., 127
Luxury: development, 55, 57; product, 62; culture growths, 91

McBride, G. M., 118, 200, 200 n., 201
McGee, W. J., 41
Mackenzie River, 5, 21–24 *passim*, 27, 57, 61, 96, 196
Mackenzie-Yukon, 60, 96, 99
McKern, W. C., 107 n.
Madesi, 51
Maguey, 150
Mahican, 93, 133, 145
Maidu, 51–55 *passim*, 191, 192
Maine, 93, 94, 95
Maize, 46, 47, 84, 87, 93, 95, 101, 112, 118, 146, 147, 148, 150, 151, 179, 186, 189, 205, 211, 215, 218, 224; growing season for, 46, 89, 93, 189, 205, 210, 211, 212, 219, 220; culture, 93, 111, 146, 205, 218; domestication of, 111, 117; introduction of, 212, 224; grinding, 219; carriers, 221
Makah, 192
Malemiut, 157
Malte, M. O., 14, 56, 92, 93, 96, 97
Mame, 110, 114
Mandan, 77, 83–87 *passim*, 91, 175
Mapimí, 128
Maricopa, 42
Maritime culture areas of the Northwest Coast, 29–31, 135, 155, 191, 192, 196
Martha's Vineyard, 131
Mascouten, 88
Masks, 24, 25, 28, 32, 33, 41, 157, 227
Mason, J. A., 122 n., 125 n., 130 n.
Mason, O. T., 6–7, 49, 53, 60, 61, 92, 96, 127
Masonry, 32, 46, 122, 123
Massachuset, 131, 133, 145, 168
Massachusetts, 60, 94, 133, 211
Matagalpa, 110
Matagorda Bay, 71
Mathiassen, T., 10, 21, 27 n.
Matrilinearism, 33, 41, 62, 75, 85, 87, 92
Maupok, 22, 23
Maya, 5, 13, 110–112, 200, 223; influence, 109, 110, 114; culture, 110–112, 114, 115, 206, 218, 226; ruins, 111, 115; sculpture, 111, 112, 115, 226; calendar, 111, 112; language, 112–115, 175; place names, 115; cities, 115; people, 116, 206
Mayo River, 38, 39, 125, 127, 177
Mazahua, 119
Means, P. A., 163 n., 165
Medicine bundle, 77
Meigs, P., 43 n., 178, 178 n., 179
Melville Peninsula, 21–24 *passim*
Mendizábal, M. O. de, 118, 119, 121, 122, 126, 130
Menomini, 85, 88–90, 186
Merriam, C. H., 13, 15, 51, 54, 69, 131, 131 n., 144, 179
Mesa Central, 116–119 *passim*, 121, 157, 161, 198, 200, 201, 218–219
Mesa Verde, 211
Mescal, 153. *See also* Agave, Maguey
Mescalero, 36, 37, 38, 79, 133
Mestizo, 160, 161
Metate, 123
Methow, 56
Mexicano. *See* Aztec; Nahua
Mexico City, 71, 117
Miami, 90, 106
Mica, 106, 227
Michelson, T. H., 10, 93, 97, 98
Michigan, 88, 89, 90
Michoacán, 116, 117, 118, 119
Micmac, 93, 171
Mimbres, Mimbreño, 36–38, 227
Minnesota, 88, 212
Mississippi Alluvium, 183
Mississippi River, 75, 86, 90, 92, 130, 206, 215, 221, 223; drainage, 102, 206; lowland, 219
Mississippi Valley culture, 60–63 *passim*, 65, 69, 101, 107, 148, 227
Missouri River, 81, 82, 83, 86; drainage, 52; tribes, 85, 86; farming in, Valley, 212
Mitla, 115
Miwok, 154, 168, 191, 192, 193
Mixe, 115
Mixtec, 115, 116
Mobility, populational, 176
Mocorito River, 123, 126
Modoc, 51, 57, 190, 192, 201
Mogollon, 33, 36
Mohave, 41, 42, 43

Moieties, 24, 75
Mollusks, 44, 146, 171
Monacan, 145
Mono, 52, 155, 191
Mono-Bannock, 173, 190
Montagnais, 96, 97, 98, 149, 171, 194
Montauk, 133, 145
Monte Albán, 115
Mooney, J., 9, 75, 80, 81, 83, 94, 131, 132, 134, 144, 152, 156, 157, 159, 164, 172, 177, 179, 181
Moore, C. B., 67, 67 n., 105
Morelos, 117
Morris, E. H., 46
Morss, N., 45 n.
Mortar, 219
Mosquito (tribe), 110
Motozintlec, 113
Mound(s), 74, 89, 118, 148, 176, 184; Cyrus Thomas' work on, 101–103; pyramid, 117, 118, 122, 123; earth, 123
Mound Builder, 64, 90, 91, 94, 149, 184, 220, 221, 224
Mourning, 24, 41, 52, 54
Muddy River, 52
Müller, S., 7
Murdock, J., 10
Murie, J., 80
Musk ox, 23
Muskingum Valley, 212
Muskogian, Muskogi, 5, 61–67 *passim*, 74, 92, 149, 173, 175, 176, 183, 184, 224
Muskogian-Siouan, 94
Myres, J. L., 2 n.

Na-Dene, 173
Nabesna, 100
Nahua, 110, 116, 117, 119, 124–125, 200
Nakotcho, 100
Nanticoke, 93
Nantucket, 131
Narraganset, 131
Naskapi, 96, 97, 98, 194
Natchez, 61–65 *passim*, 74, 75, 130, 145, 149, 175, 183, 215, 224, 227
Natsit, 100
Nauset, 131
Navaho, 4, 35, 38, 100, 133, 142, 152, 179
Navigation, 214
Nayarit, 118, 123, 124, 127, 178, 218
Nazas River, 129
Nazca, 115
Nebraska, 75, 86
Nelson, E. W., 10
Nelson, N. C., 67 n.
Nelson River, 97
Nets, 22
Neutral (tribes), 91, 133
Nevada, 45, 47, 50, 53, 208
New Brunswick, 93, 133
New England, 60, 93, 94, 132, 133
New Hampshire, 93
New Jersey, 93
New Mexico, 35, 36, 178, 211, 219
New Spain, 160, 161
New York, 89, 95, 106, 133, 211
Newcomb, C. F., 9
Newfoundland, 96, 171
Niantic, 131
Nicaragua, 109, 110, 111, 157, 159, 161, 206
Nicarao, 110
Nicola, 56, 99, 100
Nio, 39
Niobrara, 83
Nipmuc, 133, 145
Nisenan, 55, 192
Niska, 196
Noguera, A., 122 n.
Nomads, 120, 126, 219
Nordenskiöld, E., 4
North Dakota, 212
North Mexican Interior Plateau culture area, 119, 126, 128–130
North Pacific Coast culture area. *See* Northwest Coast
Northeast Asia, 21, 24
Northern culture areas, 61, 95 f., 101, 141, 142, 143, 144, 149, 169, 171
Northern Great Lakes culture area, 182
Northern Plateau Apex culture area, 99, 141, 196
Northern Sierra, 120
Northwest California, 31, 53, 55
Northwest Coast, 24, 28 f., 31, 44, 49, 51, 53, 55, 56, 60, 76, 99, 134–135, 143, 144, 153, 155, 156, 157, 159, 167, 169, 170, 175, 191, 192, 196, 204, 214, 223, 224
Northwest Gulf Coast culture area, 71, 126, 130, 139
Norton Sound, 24
Nottoway, 94, 97
Nova Scotia, 93, 96
Nuclear America, 28, 31, 218, 220, 221
Nueces, 71
Nuevo León, 130
Nutka, 133, 176, 192

Oats, 147
Oaxaca, 114, 115, 116, 123
Oceania, 28; intrusions, 172; stimuli, 224
Oconee, 65
Ofo, 63, 183
Oglala, 76, 82
Ohio, 89, 90; drainage, 89, 90; River, 215, 223
Ohio Valley, 63, 64, 85, 89–91, 95, 103, 140, 143, 148, 186, 223
Ojibwa, 35, 83, 84, 86, 87, 88, 96, 97, 142, 149, 186; Plains, 83, 84
Okanagan, 56, 196
Oklahoma, 75
Okmulgee, 65

Olive, 124, 126, 130
Olson, R. L., 45 n.
Olympic Mountains, 192
Omaha (tribe), 77, 79, 84–86, 90
Ontario, 89, 211
Opata, 39, 40, 123, 159, 177, 200, 223
Opler, M., 36 n.
Orange, 112
Oregon, 53
Orotina, 110
Orozco y Berra, M., 10, 39, 124, 127 n.
Osage, 75, 76, 84, 85
Osgood, C., 11, 99, 100
Osochi, 65
Ossuaries, 62
Oto, 85, 86
Otomí, 116, 119, 120, 121, 128, 200
Ottawa, 97, 182

Pacific: Coast culture traits, 56; drainage, 99, 100, 172; slope, 109, 110; population, 142, 144, 145, 150, 172, 213, 220; speech stocks in, drainage, 172–173, 176, 217; culture-physiography accord on, coast, 204
Paddle, double-bladed, 44
Paintings, 4, 32, 33, 44, 77, 225
Paipai, 41, 43
Paiute: Southern, 41, 43, 52, 57, 131, 189; Northern, 57
Palaeo-Asiatics, 20, 28
Palisades, 75, 87, 184
Pame, 120, 124, 126, 129
Panama, 109
Pánuco River, 71, 116, 119, 129, 130, 218, 221
Papago, 125, 144, 152, 177
Parflêche, 56
Park, W. Z., 11
Parkland, 16, 78, 90, 97
Parras, 128
Pattern complexes, 3
Patrilinearism, 33, 75
Patwin, 54, 192
Paviotso, 131
Pawnee, 62, 75, 76, 77, 79, 83–87 *passim*, 133, 187
Paya, 110
Peach, 112
Pearl River, 65
Pearls, 91
Pecos River, 37, 71
Pennacook, 93, 133; River, 93
Pensacola, 66
Penutian, 192, 216
Peppers, 221
Pequot, 133, 145
Pericú, 43, 44
Peru, 115, 149, 163, 166, 214, 226
Petatlán River. *See* Sinaloa River
Petrie, F., 5, 225, 226
Physiography, 201 ff.
Piaxtla River, 126
Piedmont-Atlantic Coastal Plain, 201
Piegan, 80, 81
Pima, 39, 43, 120, 123, 125, 144, 152, 159, 177
Pima-Tepehuán, 125, 127
Pinal, 36
Pinaleño, 36
Pinome, 178
Pipes, 92
Pipiles, 100
Pit River, 52, 137, 190, 192
Pitahaya, 44
Plains, 5, 35, 37, 47–51 *passim*, 56, 57, 60, 61, 74–85 *passim*, 87, 133, 139, 149, 187, 188, 206
Plainsmen, 48, 87
Plateau: culture, 28, 59, 76; Northern, Apex, 99; North Mexican Interior, 128 f. *See also* Colorado and Columbia plateaus
Platte River: drainage, 75; North, 82; Middle, populations, 139
Point Barrow, 24, 26, 27
Pokomam, 110
Pomo, 51, 54, 55, 168, 175, 193
Ponca, 85, 86
Population, 88, 89, 90, 93, 94, 101, 118, 128, 129, 131 ff., 179, 181, 184, 213, 215, 220, 226
Pork, 96
Potato, 112
Potawatomi, 88, 90, 97
Potomac River, 64, 93
Pottery, 24, 32, 33, 35, 42, 44, 46, 47, 50, 52, 67, 70, 74, 87, 92, 103 ff., 105, 106, 109, 110, 115, 118, 122, 123, 126, 153, 183, 208, 221, 226, 227
Powder River, 82
Powell, J. W., 8, 10, 173
Powhatan, 94
Prairie, 75–78, 81, 83–87 *passim*, 89, 90, 91, 97, 139
Precipitation, 33, 60, 69, 71, 92, 129, 207, 209 ff., 218
"Prepolíticos, grupos," 126
Preuss, K. T., 127
Priests, 32, 33
Property: distribution, 24, 157; law, 222
Provisions, 95
Prudden, T. M., 46
Pueblo, 3, 4, 5, 31, 32, 34, 35, 37, 38, 45, 46, 47, 50, 52, 59, 74, 75, 76, 122, 123, 127, 132, 133, 136, 151, 152, 153, 155, 177, 189, 190, 203, 204, 206, 208, 210, 211, 219, 220, 221, 223, 224, 227
Puerto Rico, 67
Puget Sound, 30, 31, 135, 155, 214
Pumpkins, 146
Pyramids, 71, 117, 118, 122, 123, 130

Quapaw, 63, 64, 75, 86, 145, 183
Qu'iché, 110, 114
Quileute, 192
Quinault, 192
Quipu, 226

Radin, P., 221
Rama, 110
Ranchito de las Ánimas, 116
Rank, emphasis on, 62
Ratzel, F., 7
Ray, V. F., 11, 56 n.
Red River, 63, 86, 139, 183, 220
Reichard, Gladys, 144 n., 179
Reindeer, 21, 23
Religion, 42, 43, 92, 222
Residence adjustment, 13
Rhode Island, 93, 133
Rice. *See* Wild rice
Rink, H., 134 n.
Rio Grande, 35–38 *passim,* 47, 48, 70, 71, 109, 117, 118, 126, 130, 133, 134, 157, 159, 165, 181, 188, 208, 223. *See also* Santiago River
Río Grande del Sur, 128
Rituals, 3, 32, 33, 35, 42, 52, 77, 78, 87, 88, 222, 224, 227
Rivet, P., 164, 165, 214
Roads, 226
Roberts, F. H., 9, 46 n.
Rocky Mountains, 48, 50, 55, 56, 61, 62, 78, 80, 82, 86, 87, 88, 93, 94, 99, 190, 204, 208, 217
Rogers, D., 45 n.
Rogers, M. G., 45 n.
Root(s), 78, 146
Rosenblat, A., 179
Royce, C. C., 10
Russell, R. J., 154, 207, 207 n., 211
Russian River, 154

Sabine River, 71
Sacramento River, 154, 192, 215
Sacrifice, captive, 62, 74, 75
Saddles, 79
Sahaptin, 56, 57, 133, 188, 189
St. Lawrence and Great Lakes culture area, 60, 61, 92, 96
St. Lawrence River, 91, 92, 96, 97, 215
Salinan tribes, 193
Salish: tribes, 49, 56, 57, 133, 173, 188, 189; Fraser, 49, 57; Thompson, 56, 196; Coast, 142; Gulf of Georgia, 156; Lake, 196
Salmon, 24, 49, 51, 55, 214; spear, 23; eaters, 27; Area, 28
Salmon River, 56; Mountains, 51
Salt, 121
Salvador, 110, 111, 114, 157, 159, 161
Samoyed, 20
San Joaquin Valley, 154, 207
San Juan River, 189, 223; pottery, 227
Sand paintings, 32, 44
Sanders, E. M., 15, 111, 129, 200
Santa Barbara Islands, 38, 44, 154, 175
Santee, 77, 84, 85, 88, 187
Santiago River, 118, 119, 124, 177, 201, 218. *See also* Río Grande del Sur
Sapir, E., 4, 34, 76, 173
Sapper, K., 10, 111, 113, 113 n., 115, 164, 165
Sarsi, 80, 84, 86, 99, 100, 195
Sauer, C. O., 11, 32 n., 47 n., 111 n., 118, 122, 122 n., 123 n., 124, 124 n., 126, 128 n., 147, 159, 177, 178, 180, 211, 218, 221 n.
Sauk, 85, 86, 186
Saulteau, 97
Savannah River, 63, 92
Sayles, E. B., 47 n., 130 n.
Scapulimancy, 101
Schmidt, E. F., 47 n.
Schmieder, O., 165
Scioto Valley, 106
Sculpture, 109, 110, 111, 112, 117, 226
Sea otter, 44
Seal, 20, 21, 22, 23, 25, 157
Seeds, 49, 82, 146
Sekani, 99, 100, 195
Seler, E., 117, 123 n.
Semple, E., 7
Seri, 40, 41, 44, 124, 125, 159
Serrano, 193
Setzler, F. M., 103 n.
Severn River, 97
Seward Peninsula, 24
Shamans, 23, 33
Shantz, H. L., 14, 15, 38, 63, 71, 74, 83, 90, 93, 94, 95
Shasta, 55, 192; River, 55
Shawnee, 64, 65, 90, 95, 184, 185
Shelford, V. E., 14, 15, 29 n., 54, 56, 69, 90, 96, 129
Shelter, 78, 88
Shepard, Anna O., 33 n., 46 n.
Shetrone, H. C., 106
Shoshone, 48, 52, 57, 86, 87, 188, 190; Wind River, 52, 80, 82, 137, 188, 206; Western, 57; dialect, 80, 173
Shoshonean(s), 43, 44, 53, 188, 190, 191; culture, 79; languages, 124, 173, 216. *See also* Great Basin
Shreve, F., 14, 15, 57, 63, 69, 71–73, 89, 90
Shuswap, 56, 57, 196
Siberia, 24, 27, 101, 134
Sibs, 41, 92
Sierra-Cascades, 31, 51, 191, 192, 196, 201
Sierra del Nayarit, 126, 127, 128
Sierra del Sur, 118, 197, 200, 201
Sierra Madre, 33, 38–40, 122, 124, 125; Occidental, 120, 197, 199, 218; Oriental, 120, 122, 130

Sierra Madre culture areas, 126, 128
Sierra Nevada, 50–54 *passim*, 154, 204
Sikyatki, 227
Silver, 35
Sinaloa, 32, 39, 118, 120, 123, 124, 126–128, 178, 200, 218, 223
Sinaloa River, 38, 39, 123, 124
Sinkiuse, 56
Sinkyone, 55
Siouan, 63, 64, 75, 76, 79, 84–86, 90, 91, 92, 94, 95, 134, 145, 149, 176, 183, 184, 186, 187
Siuslaw, 133
Skeena River, 99
Skin boats, 23, 25
Skinner, A., 97
Slab: construction, 46; grinding, 219
Slave: River, 100; tribes, 100, 195
Sledge, 157
Smith-Perry theory, 221
Smith Sound, 22, 23
Snake River, 51, 55, 56, 57
Snake-Salmon area, 137, 188
Snowshoe, 101
Societies: age-graded, 76, 78, 85, 88; shamanistic, 76; dancing, 76
Solomonsville, 47
Song cycles, 41, 42, 52
Sonora, 33, 39, 43, 123, 136, 178, 218; speech, 38, 39, 124, 125, 126, 128; Coast, 40, 44, 125, 136, 200; culture, 41, 43, 120, 123, 200; Desert, 190, 197, 200, 201
Sonora-Gila-Yuma culture, 32, 33, 38, 42, 47, 136, 190, 206
Sotol, 38
Soustelle, J., 119 n.
South America: culture, 4, 69; ethnographic frontier of North America and, 109; influence from, 110; population, 164, 165, 166; attitude toward sea in, 214
South Carolina, 60, 62, 92
South Florida. *See* Florida
South Mexican culture, 71, 120
South Texas. *See* Texas
Southeast culture area, 60, 61, 63, 67, 79, 92, 93, 105, 176; culture, 64, 74, 75, 90, 91, 94, 101, 206, 215; climax, 71, 183, 224; traits, 71, 74, 95; subsistence pattern, 74; confederacies, 92; population, 132, 133, 138; language, 175
Southeast-Lower Mississippi culture area, 86, 215
Southampton Island, 22, 23
Southwest culture: area, 32, 33, 38, 49, 53, 54, 128, 142, 200; subareas of, 33; Pueblo form of, 40, 189; culture, 44, 48, 50, 54, 55, 60, 71, 74, 75, 87, 153, 190; South Mexican traits in, 120; population, 133, 136–137, 143, 144, 146, 151, 152, 156, 158, 159, 169, 170, 177, 178, 190; agricultural tribes of, 146; maize in, 151; farmers, 179; Southern California subculture in, 193; American, 218, 219; beans, 221; native agriculture of, 221; climax declining, 224
Spaniards, 37, 79, 92, 112, 117, 124, 126, 133, 151, 177, 178, 218
Spanish: pacification, 35; culture, 40, 118; contact, 62, 75, 87; encroachment, 67; influence, 74; population figures, 179
Spear: bird, 23; thrower, 23, 44
Speck, F. G., 10, 64, 94, 98
Speech, 98; Yuman, 38, 42, 175; alteration of, 82; relationship, 83, 212; Siouan, 92; distribution of dialects, 114; Zapotec and Mixtec, 115, 116; Nahua, 117; Coahuiltec, 130; families and stocks, 172 ff.; diverging tendencies, 176, 206; and drainage areas, 215, 216
Spier, L., 4, 10, 11, 30 n., 41, 42 n., 43 n., 50, 51 n., 56 n., 76
Spinden, H. J., 62 n., 110 n., 111, 119, 122, 146 n., 164
Spokane, 56
Squash, 46
Steensby, H. P., 10, 21, 22, 26 n., 213
Steward, J. H., 11, 45 n., 52, 52 n.
Stewart, Omer C., 11, 52 n.
Stikine River, 57, 99, 100
Stinkard, 62
Stirling, M., 106 n.
Stoll, O., 10, 112
Stone: pot, 23; axes, 123
Stono, 145
Strong, W. D., 75 n.
Subarctic: culture area, 57, 99; forest, 93, 96; province, 96; Eastern, 97–98, 141; Western, 98, 99, 141; Interior Tundra, 99, 141
Subsistence, 24, 25, 49, 50, 52, 57, 70, 78, 96, 152, 176, 186, 207, 214; areas, 6, 175; adaptations, 27, 60, 153, 213; system, 35; basis, 44, 77, 85, 93; California, 53, 54, 55; patterns, 74; bison, 77, 88; influence, 89, 215; hunting and fishing, 95; régimes, 121; agriculture a contributor to, 148, 219; mechanism, 152, 153, 223; unit in Peru, 163
Subtiaba, 110
Sugar cane, 112, 117
Sumo, 110
Sun dance, 56, 76, 77, 78, 80, 82, 85, 87
Sun Spouse, 62
Sunflower, 221
Susquehanna, 91, 93
Sutaio, 82
Swanton, J. R., 8, 10, 39, 64, 65, 66, 67, 71, 74, 95 n., 124, 131 n., 132, 133, 145 n., 176
Sweet potato, 221
Symbolism, 32–33, 42, 62, 75

Tabasco, 111
Tahltan, 57, 99, 100, 196
Tahue, 123, 125, 178
Takkuth, 100
Taku River, 100
Taku-tine, 57, 99, 100, 196
Tamaulipas, 120, 126, 130, 220, 223
Tamaulipec, 70, 71, 119, 126, 200; language, 124, 130
Tampico, 71, 130
Tanaina, 100
Tanana, 100
Tano, 34, 48, 133
Taos, 47, 211
Tarahumar, 32, 39, 40, 120, 126–128, 159, 177, 200, 223
Tarasco, 117, 118, 119
Tawakoni, 74
Tecual, 125
Tehuacán, 116
Tehuantepec, 115, 197, 200, 201
Tehueco, 38, 39
Teit, J., 9, 10
Temperature, 60, 69, 92, 203, 207, 214
Tena, 100
Tennessee, 90, 106, 227
Tennuth, 100
Tent: folding, 78; houses, 101
Teotihuacán, 116
Teotitlán, 116
Tepecano, 120, 125–127
Tepee, 56, 76, 77, 82, 84
Tepehuán, 39, 120, 125, 126, 128, 177, 200
Tepic, 120
Teton, 49, 76, 77, 80–84 *passim,* 86, 87
Teul, 124–127, 200
Texas, 37, 70, 120, 130, 221, 223; South, culture area, 37, 70–74 *passim,* 79, 183; groups, 86; population, 139, 144, 145, 159
Tezcoco, 116
Thayer, W. N., 118, 118 n., 197, 197 n., 200, 201
Thomas, C., 8, 10, 39, 101 ff., 124
Thornthwaite, C. W., 212 n.
Till Plains, 186
Timucua, 61, 62, 64, 183
Tionontati, 91, 133
Tiwa, 47
Tlacolula, 115
Tlaxcala, 116, 124
Tlingit, 24, 26, 57, 99; speech, 173, 176
Tobacco, 112
Toboggan, 101
Toboso, 126
Toltec 110, 115–118 *passim,* 200, 221, 223, 226
Tonkawa, 70, 79, 86
Tonto, 36
Tools, 95, 147
Tortilla, 219
Torture, 62, 74, 77, 150
Totõnac, 114, 116, 122, 200, 226
Totorame, 123, 178
Tozzer, A. M., 111 n.
Trading posts, 95
Tranjik, 100
Transportation, 88, 205, 213, 215
Traps, 95
Travois, 76, 78
Trinity drainage, 55
Trinkets, 55
Tripod, 122, 123
Tsetsaut, 99, 100, 101
Tsimshian, 57, 133, 176
Tuchone, 100
Tula, 116
Tundra, 13, 15, 20, 25, 27, 95, 98, 99, 141
Tunica, 61, 63, 64, 183
Turner, L. M., 10
Tuscarora, 94
Tuskegee, 65
Tutelo, 94
Tutlit, 100
Tzental, 110, 113, 114
Tzotzil, 110, 113

Ugalakmiut, 157
Ulua, 110
Ulua-Suma language, 110
Umiak, 23
Urbanization, 163
Utah, 45, 47, 50, 219
Ute, 49, 52, 57, 82, 188, 189
Ute-Chemehuevi, 173, 190
Uto-Aztecan languages, 34, 38, 39, 124–127 *passim*
Utok, 23

Vaillant, G., 117 n.
Valley of Mexico, 119, 123, 151, 163
Vancouver Island, 30
Vaqueros, 79
Varohio, 39. *See also* Huarejía
Vegetation: areas, 13 ff., 42, 60, 129; in Apache habitats, 38; subhumid, 44; natural, 47, 190, 206, 218; Basin, 50; California, 53; Florida, 70; Rocky Mountain, 99; Mesa Central, 117; Sinaloa, 127; directly edible, 178
Velasco, Juan López de, 165, 166
Vera Cruz, 114, 116, 119, 122, 221
Verde River, 37, 47
Village Prairie culture subarea, 82, 85, 140
Virgin River, 52
Virginia tidewater area, 64, 94, 141
Volcanic area of Mexico, 118, 197, 200, 201
Vunta, 100

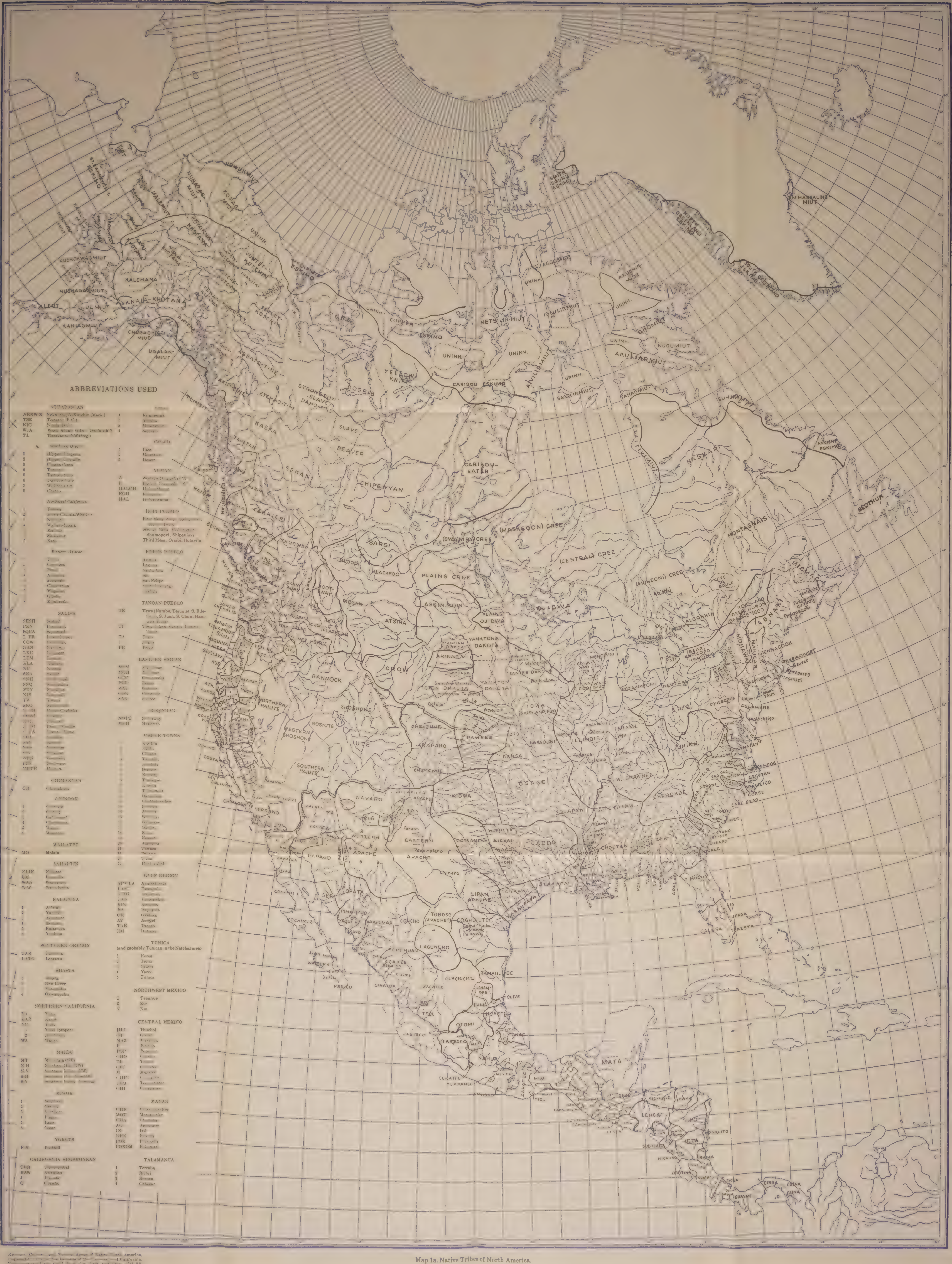
Waco, 74
Wagner, G., 80 n.
Waicura, 43, 44

Wailatpu, 56
Wakash, 173
Wakashan group, 30
Walapai, 41, 42, 50, 142, 179
Walker, S. T., 67 n.
Walrus, 22, 23
Wampanoag, 131
Wappinger, 93, 133
War, 24, 62, 74, 75, 77, 93, 128, 148, 149, 151, 152, 220, 224
War-fleet expeditions, 157
Washo, 53, 191, 207
Waterman, T. T., 44 n.
Watersheds, 102, 216, 217
Watson, J. R., 69, 70
Wealth, 28, 149, 220, 226
Weapemeoc, 145
Weapons, 35
Weaving, 24, 35
Weber, F., 110 n.
Wenatchi, 56
West Indies, 67, 69, 164, 165, 166, 219
West Virginia, 89
Whale, 22, 23, 24
Wheat, 112, 118
Whorf, B. L., 125 n.
Wichita, 74, 84; Mountains, 74
Wild rice, 89, 112, 117, 186, 213, 215
Wild Rice culture area, 85, 89, 90, 91, 92, 97, 186
Wild Seed culture area, 49
Willamette Valley, 30, 31, 136, 155, 206
Willcox, W. F., 159, 160, 164, 165, 166
Willoughby, C. C., 106 n., 132 n., 133 n.
Winchell, N. H., 10
Winnebago, 85, 88–91, 96, 186
Wintu, Wintun, 51, 55, 192
Wisconsin, 85, 88, 89, 140, 211; Driftless, 89, 186
Wissler, C., 4–8 *passim*, 13, 28, 32, 49, 53, 60, 61, 62 n., 67, 74, 76, 78, 80, 82, 83, 84, 92, 96, 101, 107, 108, 119, 122
Wiyot, 173
Wood, 22, 23, 78
Woodland: Eastern, 5, 60, 61, 92, 96; culture, 86, 87; culture area, 96; Prairie-, tribes, 187
Wool, 35
Wyman, J., 67 n.
Wyoming, 82, 83, 86

Xalisco, 118, 126. *See also* Jalisco
Xicaque, 110
Xixime, 124, 125, 126, 128, 178
Xochicalco, 117

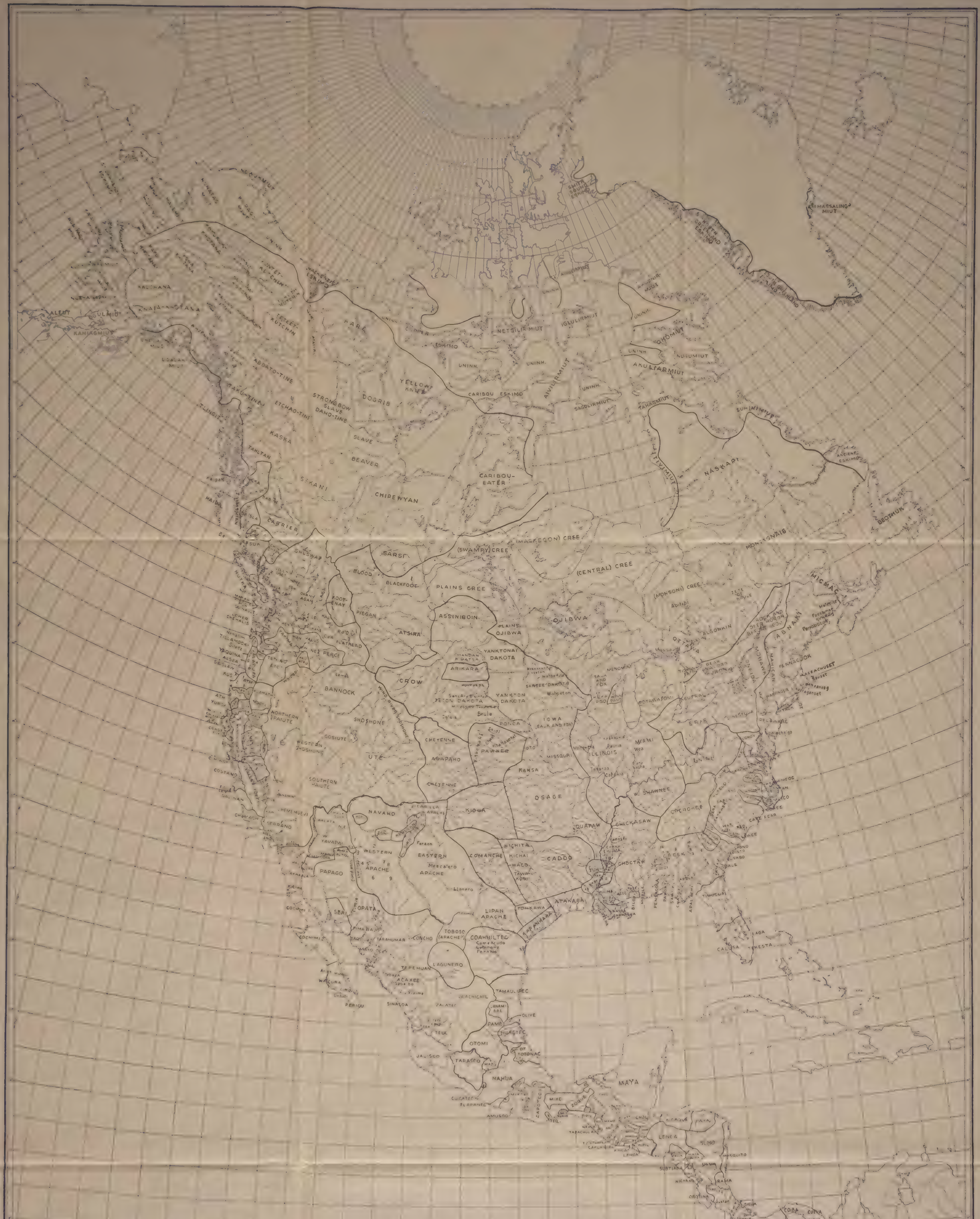
Yakutat Bay, 176
Yamasi, 65
Yankton Dakota, 83–85, 187
Yanktonai Dakota, 81–85
Yaqui, 38, 39; River, 38, 39, 40, 125, 127, 136, 177
Yaquina, 133
Yavapai, 41, 42, 133, 142, 179
Yazoo River, 65
Yellow fever, 164
Yellowknife, 99, 100, 194
Yokuts, 52, 154, 175, 192
Yucatán, 111, 123, 124, 201, 218
Yucca, 112
Yuchi, 5, 61, 63, 64, 65, 145, 184
Yuit, 24, 134
Yuki, 193
Yukon, 27, 57, 99, 142
Yukon-Kuskokwim: deltas, 24; salmon-eaters, 27
Yukon-Mackenzie: culture area, 60, 96; drainage, 96, 99
Yuma speech, 38, 42, 175
Yumans, 41–44 *passim*, 129, 133, 152, 177, 189, 190
Yurok, 173

Zacatec, 115, 120, 124–126, 200
Zacatecas, 122, 123, 127, 129, 218
Zape ruins, 122, 128
Zapotec, 115, 116, 198, 200, 226
Zingg, R. M., 40 n., 127
*Zizania*, 89. *See also* Wild rice
Zoe, 39
Zon, R., 14, 15, 38, 63, 71, 74, 83, 90, 93–95
Zoque, 115
Zuaque, 39
Zuñi, 34, 35, 133, 227


ABBREVIATIONS USED
ATHABASCAN
NEKW-K Nekwichenjik-Kutchin (Mack.)
TSE
NIC
W. A Wash. Athab. tribe ('Owlapsh'?)
TL Tlatskana, (NW Oreg.)
Southwest Oregon
Northwest California
Western Apache
SALISH
SESH
PEN
SQUA
L. FR
COW
NAN
LKU
LUM
KLA
Serrano
Kitanemuk
Serrano
Cahuilla
Pass
Mountain
Desert
YUMAN
HALCH
KOH
HAL
HOPI PUEBLO
Shumopovi, Shipaulovi
Third Mesa: Oraibi, Hotavila
KERES PUEBLO
Acoma
Laguna
Santa Ana
Sia
San Felipe
Santo Domingo
Cochiti
TANOAN PUEBLO
TE Tewa (Nambe, Tesuque, S. Ildefonso, S. Juan, S. Clara, Hano with Hopi)
TI Tiwa: Isleta, Sandia, Picuris, Taos
TA
J
PE Pecos
EASTERN SIOUAN
CHIMAKUAN
CHINOOK
WAILATPU
SAHAPTIN
KALAPUYA
SOUTHERN OREGON
SHASTA
NORTHERN CALIFORNIA
MAIDU
MIWOK
YOKUTS
CALIFORNIA SHOSHONEAN
IROQUOIAN
CREEK TOWNS
GULF REGION
TUNICA
(and probably Tunican in the Natchez area)
NORTHWEST MEXICO
CENTRAL MEXICO
MAYAN
TALAMANCA
ALEUT
KANIAGMIUT
CHUGACHIGMIUT
UGALAK-MIUT
NUSHAGAGMIUT
KUSKOKWAGMIUT
KALCHANA
KNAIA-KHOTANA
KOYUKUKHOTANA
MALEMIUT
KUNGMIUT
NUWUKMIUT
UNINH.
KUTCHIN
MACKENZIE ESKIMO
HARE
COPPER ESKIMO
NETSILIK-MIUT
IGLULIRMIUT
AIVILIRMIUT
AKULIARMIUT
NUGUMIUT
SUHINIMIUT
SMITH SOUND ESKIMO
NORTH GREENLAND ESKIMO
AMMASSALIK-MIUT
CARIBOU ESKIMO
SAGDLIRMIUT
TAHAGMIUT
ITIVIMIUT
NASKAPI
ANCIENT ESKIMO
BEOTHUK
MONTAGNAIS
MICMAC
ABNAKI
PENNACOOK
MASSACHUSET
MOHAWK
ONEIDA
SENECA
ERIE
CONESTOGA
DELAWARE
ALGONKIN
OJIBWA
(MASKEGON) CREE
(CENTRAL) CREE
(MONSONI) CREE
SWAMPY CREE
PLAINS CREE
PLAINS OJIBWA
ASSINIBOIN
YELLOWKNIFE
DOGRIB
CARIBOU-EATER
CHIPEWYAN
STRONGBOW (SLAVE DAHO-TINE)
SLAVE
BEAVER
SEKANI
KASKA
TAHLTAN
TLINGIT
HAIDA
CARRIER
SHUSWAP
SARSI
BLOOD
BLACKFOOT
PIEGAN
ATSINA
FLATHEAD
KOOTENAY
NEZ PERCE
CROW
ARIKARA
MANDAN
YANKTONAI DAKOTA
TETON DAKOTA
YANKTON DAKOTA
SANTEE DAKOTA
MENOMINI
SAUK AND FOX
POTAWATOMI
IOWA
PONCA
OMAHA
PAWNEE
OTO
MISSOURI
KANSA
ILLINOIS
MIAMI
SHAWNEE
OSAGE
QUAPAW
CHICKASAW
CHEROKEE
TUTELO
SAPONI
CATAWBA
POWHATAN
SECOTAN
COREE
CAPE FEAR
CHOCTAW
CREEK
TIMUCUA
CALUSA
TEKESTA
JEAGA
CADDO
WICHITA
KICHAI
COMANCHE
KIOWA
KIOWA APACHE
LIPAN APACHE
CHEYENNE
ARAPAHO
BANNOCK
SHOSHONE
NORTHERN PAIUTE
WESTERN SHOSHONE
GOSIUTE
UTE
SOUTHERN PAIUTE
NAVAHO
WESTERN APACHE
EASTERN APACHE
JICARILLA APACHE
Mescalero
Jumano
TOBOSO (APACHE?)
COAHUILTEC
KARANKAWA
TONKAWA
CONCHO
TARAHUMAR
OPATA
PIMA
PAPAGO
SERI
LAGUNERO
TAMAULIPEC
ACAXEE
CAHITA
TEPEHUAN
ZACATEC
GUACHICHIL
HUASTEC
OLIVE
OTOMI
TARASCO
NAHUA
TOTONAC
ZAPOTEC
MIXE
MAYA
CUICATEC
TLAPANEC
AMUSGO
LENCA
JICAQUE
PAYA
SUMO
MOSQUITO
SUBTIABA
RAMA
NICARAO
OROTINA
GUAYMI
COIBA
CUEVA
CUNA

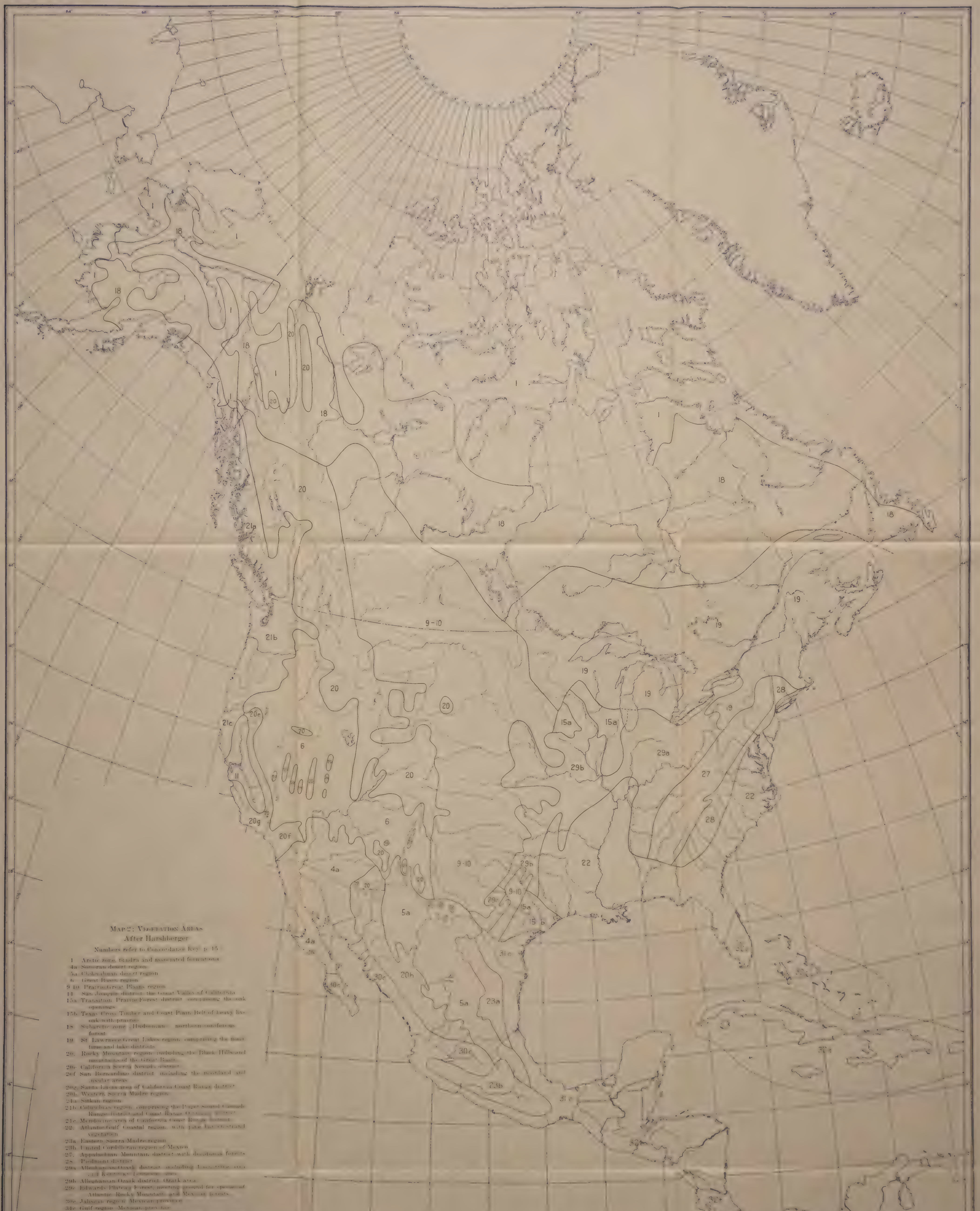
Kroeber, Cultural and Natural Areas of Native North America.
Copyright 1939 by the Regents of the University of California.
To accompany Univ. Calif. Publ. Amer. Arch. and Ethn., Vol. 38

Map 1a. Native Tribes of North America.


ALEUT
KANIAGMIUT
KAIYUHKHOTANA
TENNA
KUTCHIN
TUTCHONE
HARE
ABBATO-TINE
TAKU-TINEH
TLINGIT
ETCHAO-TINE
KASKA
TAHLTAN
SEKANI
STRONGBOW
SLAVE
DAHO-TINE
DOGRIB
YELLOWKNIFE
BEAVER
CHIPEWYAN
CARIBOU-EATER
CARIBOU ESKIMO
NETSILIK-MIUT
IGLULIRMIUT
AIVILIRMIUT
AKULIARMIUT
NUGUMIUT
SUHINIMIUT
ITIVIMIUT
NASKAPI
TAHAGMIUT
SAGDLIRMIUT
UNINH.
ITA ESKIMO
ANGMASSALINGMIUT
BEOTHUK
MONTAGNAIS
MICMAC
ABNAKI
PENNACOOK
MASSACHUSET
CARRIER
SHUSWAP
SARSI
BLOOD
BLACKFOOT
PLAINS CREE
(SWAMPY) CREE
(MASKEGON) CREE
(CENTRAL) CREE
(MONSONI) CREE
OJIBWA
PLAINS OJIBWA
ALGONKIN
OTTAWA
KOOTENAY
PIEGAN
ATSINA
ASSINIBOIN
YANKTONAI DAKOTA
MANDAN
HIDATSA
ARIKARA
NEZ PERCE
FLATHEAD
CROW
BANNOCK
SHOSHONE
NORTHERN PAIUTE
WESTERN SHOSHONE
GOSIUTE
UTE
SOUTHERN PAIUTE
TETON DAKOTA
YANKTON DAKOTA
SANTEE DAKOTA
PONCA
IOWA
CHEYENNE
ARAPAHO
PAWNEE
OTO
MISSOURI
KANSA
OSAGE
ILLINOIS
MIAMI
W. SHAWNEE
ERIE
NEUTRAL
CHEROKEE
CHICKASAW
CHOCTAW
CREEK
QUAPAW
NAVAHO
KIOWA
WESTERN APACHE
EASTERN APACHE
Mescalero Apache
COMANCHE
WICHITA
KICHAI
WACO
CADDO
ATAKAPA
LIPAN APACHE
TONKAWA
KARANKAWA
COAHUILTEC
TOBOSO (APACHE?)
CONCHO
LAGUNERO
TEPEHUAN
TAMAULIPEC
OLIVE
HUASTEC
OTOMI
TOTONAC
TARASCO
NAHUA
ZAPOTEC
MIXE
MAYA
LENCA
SUMO
MOSQUITO
RAMA
SUBTIABA
NICARAO
GUAYMI
CUEVA
PAPAGO
PIMA
SERI
OPATA
COCHIMI
WAICURA
PERICU
SINALOA
ACAXEE
YUROK
HUPA
YAQUINA
CHUMASH
SERRANO
COSTANO
HAIDA
TIMUCUA
CALUSA
TEKESTA

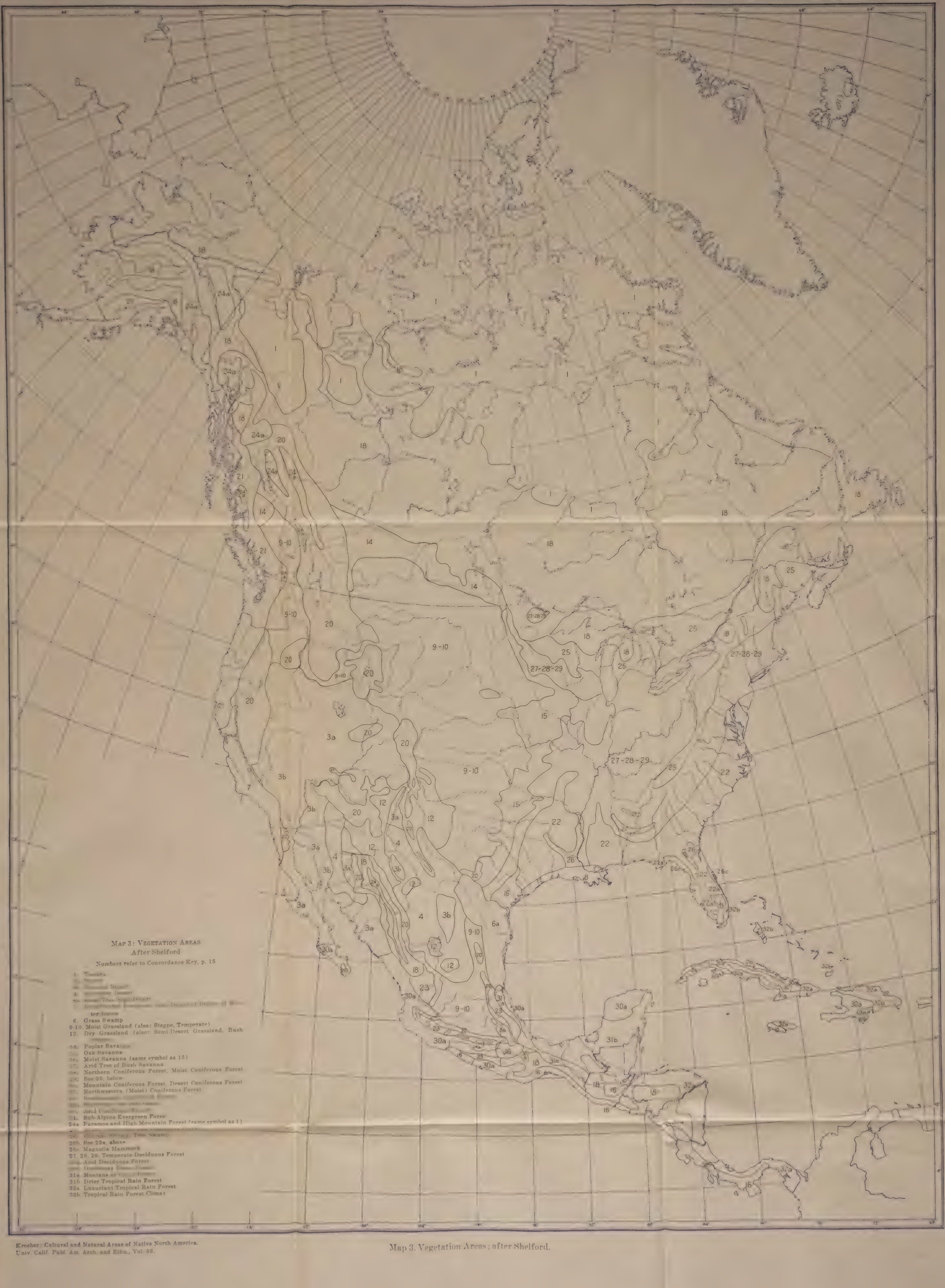
Kroeber: Cultural and Natural Areas of Native North America.
Univ. Calif. Publ. Am. Arch. and Ethn., Vol. 38.

Map 1b. Native Tribes of North America.


Map 2: Vegetation Areas
After Harshberger
Numbers refer to Concordance Key, p. 15
1 Arctic zone, tundra and associated formations
4a Sonoran desert region
5a Chihuahuan desert region
6 Great Basin region
9-10 Prairie-Great Plains region
11 San Joaquin district, the Great Valley of California
15a Transition Prairie-Forest district, comprising the oak openings
15b Texas Cross Timber and Coast Plain Belt of heavy live oak with prairies
18 Subarctic zone (Hudsonian), northern coniferous forest
19 St. Lawrence-Great Lakes region, comprising the maritime and lake districts
20. Rocky Mountain region, including the Black Hills and mountains of the Great Basin
20e California Sierra Nevada district
20f San Bernardino district, including the woodland and insular areas
20g Santa Lucia area of California Coast Range district
20h Western Sierra Madre region
21a Sitkan region
21b Columbian region, comprising the Puget Sound-Cascade Range district and Coast Range (Oregon) district
21c Mendocino area of California Coast Range district
22. Atlantic-Gulf Coastal region, with pine barren-strand vegetation
23a Eastern Sierra Madre region
23b United Cordilleran region of Mexico
27. Appalachian Mountain district with deciduous forests
28. Piedmont district
29a Alleghanian-Ozark district, including Lacustrine area and Kentucky-Tennessee area
29b Alleghanian-Ozark district, Ozark area
29c Edwards Plateau Forest, meeting ground for species of Atlantic, Rocky Mountain, and Mexican forests
30c Jaliscan region, Mexican province
31c Gulf region, Mexican province
32c Floridian and insular areas of Bahaman region, West Indian province
32d Antillean region, West Indian province
32e Guatemalan region, Central American province
32f Costa Rican region, South American province

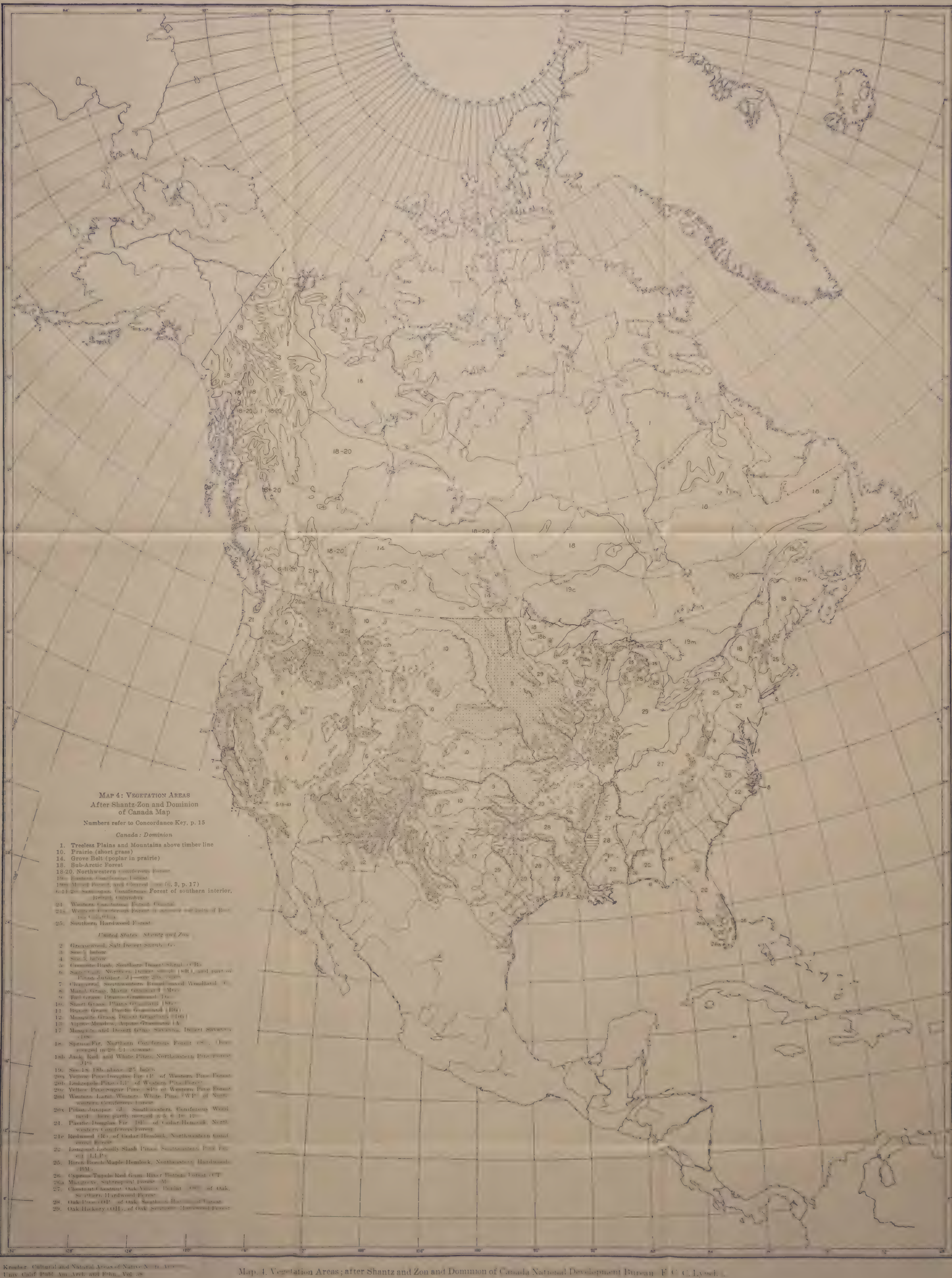
Kroeber: Cultural and Natural Areas of Native North America
Univ. Calif. Publ. Am. Arch. and Ethn. Vol. 38.

Map 2. Vegetation Areas, after Harshberger.


MAP 3: VEGETATION AREAS
After Shelford
Numbers refer to Concordance Key, p. 15
8. Grass Swamp
9-10. Moist Grassland (also: Steppe, Temperate)
12. Dry Grassland (also: Semi-Desert Grassland, Bush
Poplar Savanna
Oak Savanna
Moist Savanna (same symbol as 15)
Arid Tree of Bush Savanna
Northern Coniferous Forest, Moist Coniferous Forest
See 25, below
Mountain Coniferous Forest, Desert Coniferous Forest
Northwestern (Moist) Coniferous Forest
Sub-Alpine Evergreen Forest
24a Paramos and High Mountain Forest (same symbol as 1)
26b. See 22a, above
26c. Magnolia Hammock
27, 28, 29. Temperate Deciduous Forest
Arid Deciduous Forest
31a Montane or
31b Drier Tropical Rain Forest
32a. Luxuriant Tropical Rain Forest
32b. Tropical Rain Forest Climax

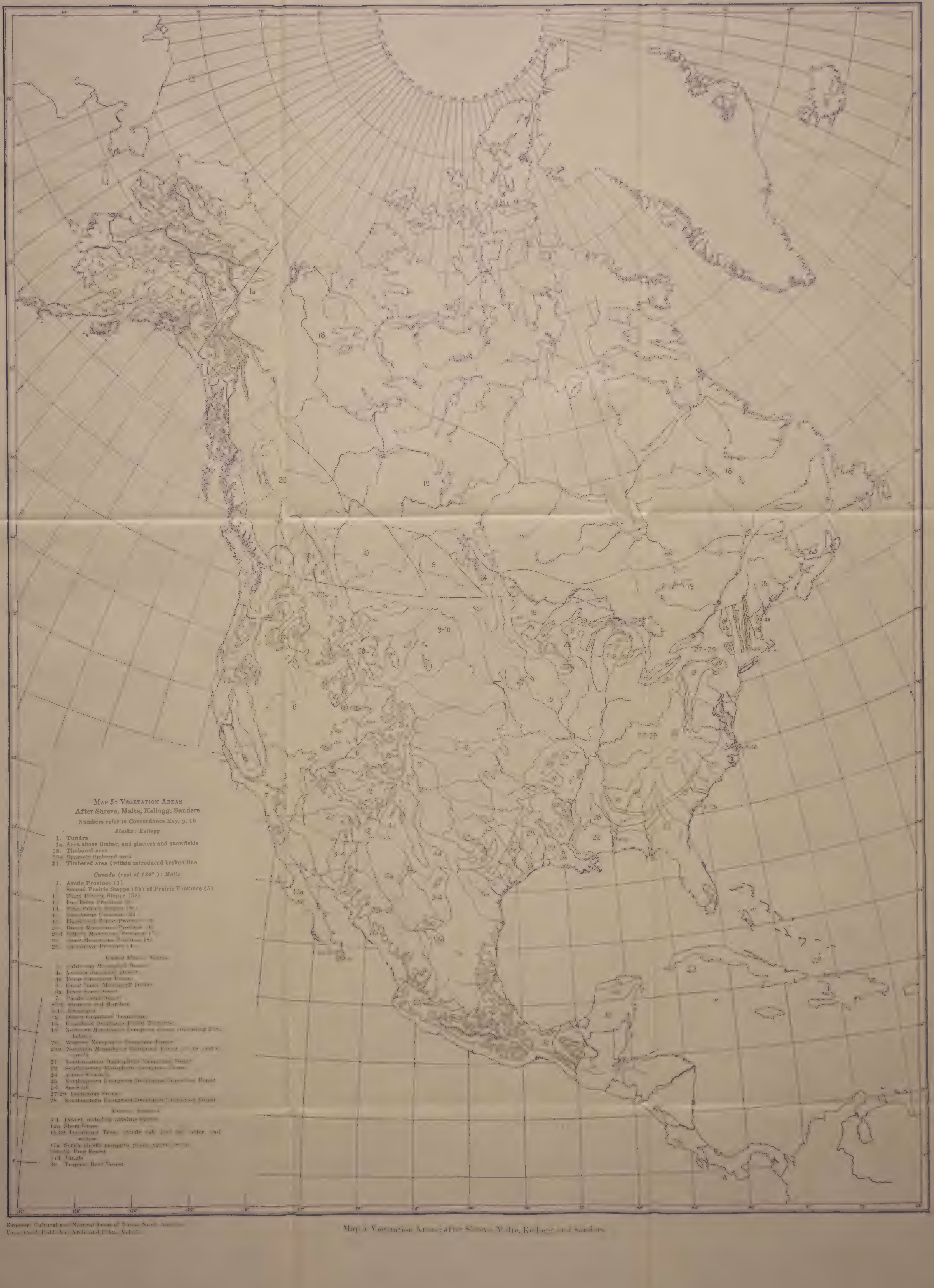
Kroeber: Cultural and Natural Areas of Native North America.
Univ. Calif. Publ. Am. Arch. and Ethn., Vol. 38.

Map 3. Vegetation Areas; after Shelford.


MAP 4: VEGETATION AREAS
After Shantz-Zon and Dominion of Canada Map
Numbers refer to Concordance Key, p. 15
*Canada: Dominion*
1. Treeless Plains and Mountains above timber line
10. Prairie (short grass)
14. Grove Belt (poplar in prairie)
18. Sub-Arctic Forest
18-20. Northwestern Coniferous Forest
19c. Eastern Coniferous Forest
19m. Mixed Forest, and Cleared (see fn. 3, p. 17)
6-11-20. Semi-open Coniferous Forest of southern interior, British Columbia
21. Western Coniferous Forest, Coastal
21s. Western Coniferous Forest in interior wet belts of British Columbia
25. Southern Hardwood Forest
*United States: Shantz and Zon*
2. Greasewood, Salt Desert Shrub (G)
3. See 5, below
4. See 5, below
5. Creosote Bush, Southern Desert Shrub (CB)
6. Sagebrush, Northern Desert Shrub (SB), and part of Piñon Juniper (J)—see 20x, below
7. Chaparral, Southwestern Broad-leaved Woodland (C)
8. Marsh Grass, Marsh Grassland (MG)
9. Tall Grass, Prairie Grassland (TG)
10. Short Grass, Plains Grassland (SG)
11. Bunch Grass, Pacific Grassland (BG)
12. Mesquite Grass, Desert Grassland (DG)
13. Alpine Meadow, Alpine Grassland (A)
17. Mesquite and Desert Grass Savanna, Desert Savanna (DS)
18. Spruce-Fir, Northern Coniferous Forest (S). (Here merged in 20, 21 in west)
18b. Jack, Red, and White Pines, Northeastern Pine Forest (JP)
19. See 18, 18b above, 25 below
20a. Yellow Pine-Douglas Fir (P) of Western Pine Forest
20b. Lodgepole Pine (LP) of Western Pine Forest
20c. Yellow Pine-Sugar Pine (SP) of Western Pine Forest
20d. Western Larch-Western White Pine (WP) of Northwestern Coniferous Forest
20x. Piñon-Juniper (J), Southwestern Coniferous Woodland (here partly merged in 5, 6, 10, 12)
21. Pacific Douglas Fir (DF) of Cedar-Hemlock, Northwestern Coniferous Forest
21c. Redwood (R), of Cedar-Hemlock, Northwestern Coniferous Forest
22. Longleaf-Loblolly-Slash Pines, Southeastern Pine Forest (LLP)
25. Birch-Beech-Maple-Hemlock, Northeastern Hardwoods (BM)
26. Cypress-Tupelo-Red Gum, River Bottom Forest (CT)
26a. Mangrove, Subtropical Forest (M)
27. Chestnut-Chestnut Oak-Yellow Poplar (OC) of Oak, Southern Hardwood Forest
28. Oak-Pine (OP), of Oak, Southern Hardwood Forest
29. Oak-Hickory (OH), of Oak, Southern Hardwood Forest

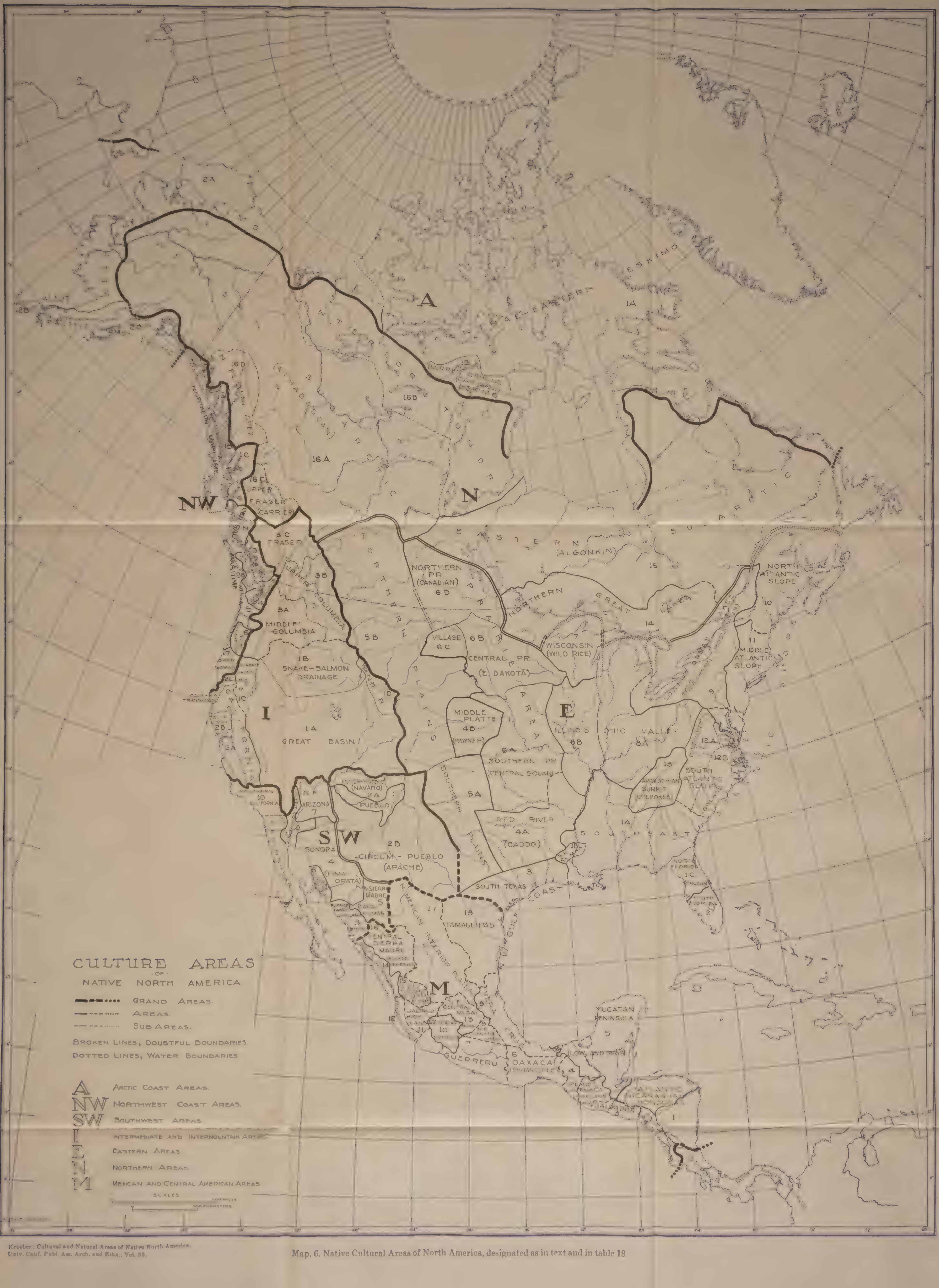
Kroeber: Cultural and Natural Areas of Native North America
Univ. Calif. Publ. Am. Arch. and Ethn., Vol. 38

Map 4. Vegetation Areas; after Shantz and Zon and Dominion of Canada National Development Bureau. E. C. C. Lysell.


Map 5: Vegetation Areas
After Shreve, Malte, Kellogg, Sanders
Numbers refer to Concordance Key, p. 15
Alaska: Kellogg
1. Tundra
1a. Area above timber, and glaciers and snowfields
18. Timbered area
18a Sparsely timbered area
21. Timbered area (within introduced broken line
Canada (east of 130°): Malte
1. Arctic Province (1)
9 Second Prairie Steppe (5b) of Prairie Province (5)
10. Third Prairie Steppe (5c)
11 Dry Belts Province (9)
14 First Prairie Steppe (5a)
18 Sub-Arctic Province (2)
19 Hardwood Forest Province (3)
20 Rocky Mountains Province (6)
20d Selkirk Mountain Province (7)
21 Coast Mountains Province (8)
25 Carolinean Province (4)
United States: Shreve
3 California Microphyll Desert
4c Arizona Succulent Desert
4d Texas Succulent Desert
6 Great Basin Microphyll Desert
6a Texas Semi-Desert
7 Pacific Semi-Desert
8-26 Swamps and Marshes
9-10 Grassland
12 Desert Grassland Transition
15 Grassland Deciduous Forest Transition
18 Northern Mesophytic Evergreen Forest (including 20w, below)
20 Western Xerophytic Evergreen Forest
20w Northern Mesophytic Evergreen Forest (= 18 west of 100°)
21 Northwestern Hygrophytic Evergreen Forest
22 Southeastern Mesophytic Evergreen Forest
24 Alpine Summits
25 Northeastern Evergreen Deciduous Transition Forest
26 See 8-26
27-29 Deciduous Forest
28 Southeastern Evergreen Deciduous Transition Forest
Mexico: Sanders
3-4 Desert including alkaline wastes
12a Short Grass
15-20 Deciduous Trees, chiefly oak (also ash, alder, and willow
17a Scrub, chiefly mesquite (yucca, cactus, agave)
20b, 23 Pine Forest
31d Jungle
32 Tropical Rain Forest
1
1a
18
20
9
10
11
20d
14
19
25
27-29
9-10
5
3-6
6
3
7
12
4c
4d
3-4
17a
17a
28
22
132°
128°
124°
120°
116°

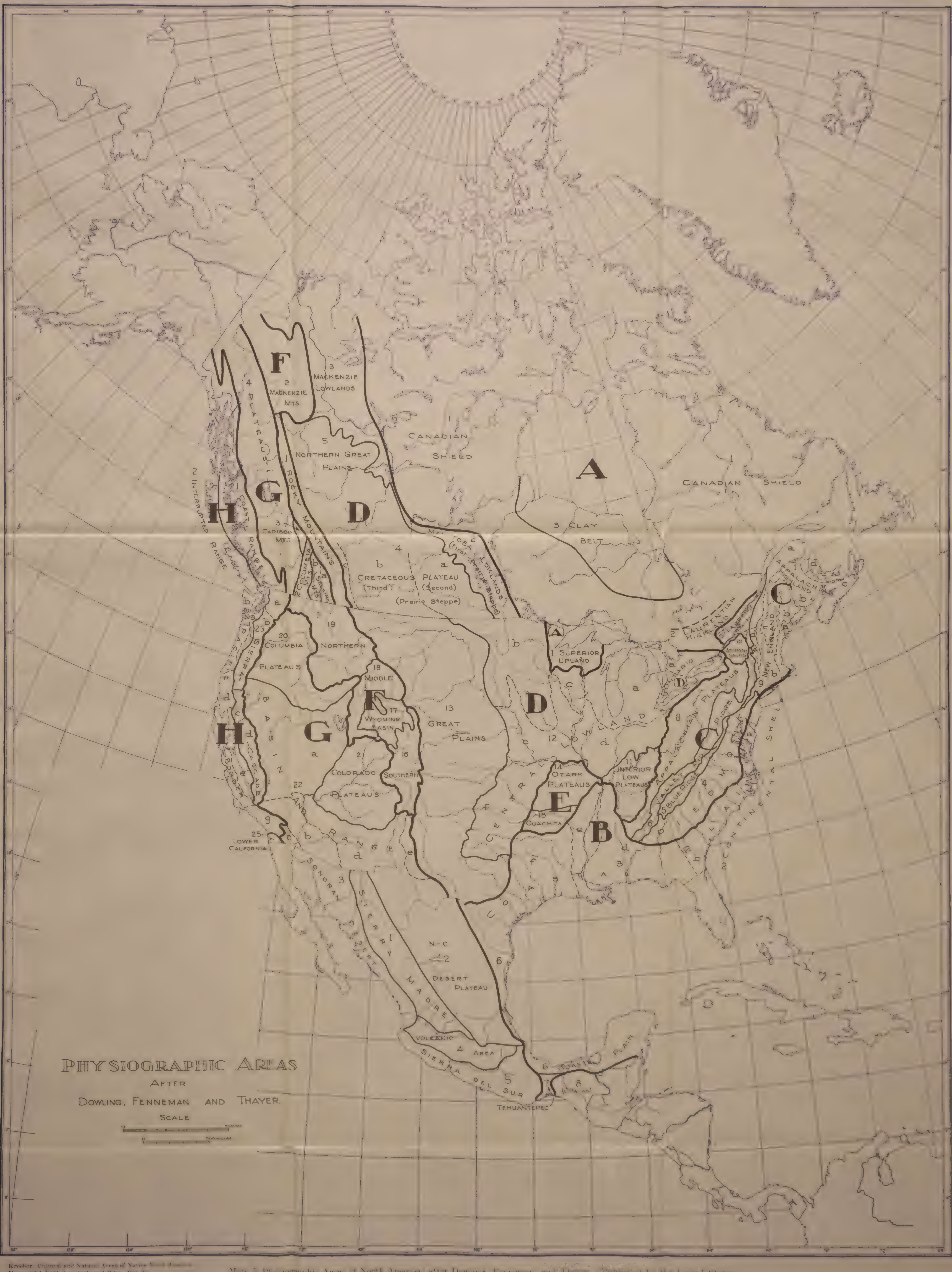
Kroeber: Cultural and Natural Areas of Native North America
Univ. Calif. Publ. Am. Arch. and Ethn. Vol. 38

Map 5. Vegetation Areas, after Shreve, Malte, Kellogg and Sanders


CULTURE AREAS
-OF-
NATIVE NORTH AMERICA
GRAND AREAS.
AREAS.
SUB AREAS.
BROKEN LINES, DOUBTFUL BOUNDARIES.
DOTTED LINES, WATER BOUNDARIES
A ARCTIC COAST AREAS.
NW NORTHWEST COAST AREAS.
SW SOUTHWEST AREAS
I INTERMEDIATE AND INTERMOUNTAIN AREAS
E EASTERN AREAS.
N NORTHERN AREAS
M MEXICAN AND CENTRAL AMERICAN AREAS
SCALES
100 MILES
100 KILOMETERS
A
N
NW
I
SW
E
M
2A
2B
2C
1A
1B
EASTERN ESKIMO
16D
16B
16A
16C UPPER FRASER (CARRIER)
ATHABASCAN
SUBARCTIC
INTERIOR
TUNDRA
NORTHERN MARITIME
1C
3C FRASER
3B
UPPER COLUMBIA
3A MIDDLE COLUMBIA
1B SNAKE-SALMON DRAINAGE
1A GREAT BASIN
1D
5B
NORTHERN PLAINS
NORTHERN PR (CANADIAN) 6D
VILLAGE 6C
6B
CENTRAL PR (E. DAKOTA)
PRAIRIE AREA
MIDDLE PLATTE 4B (PAWNEE)
6A SOUTHERN PR (CENTRAL SIOUAN)
5A
SOUTHERN PLAINS
RED RIVER 4A (CADDO)
EASTERN (ALGONKIN)
15
NORTHERN GREAT LAKES
14
7 WISCONSIN (WILD RICE)
E ILLINOIS OHIO VALLEY 8B 8A
NORTH ATLANTIC SLOPE 10
11 MIDDLE ATLANTIC SLOPE
9
12A
12B
13 APPALACHIAN SUMMIT (CHEROKEE)
SOUTH ATLANTIC SLOPE
1A SOUTHEAST
1B
NORTH FLORIDA
1C
SOUTH FLORIDA 2
SUB-ARCTIC
ATLANTIC
3 SOUTH TEXAS
GULF COAST
CALIFORNIA
10 CALIFORNIA
NE ARIZONA 7
(NAVAHO) 2A
1 PUEBLO
SONORA
2B CIRCUM-PUEBLO (APACHE)
4 PIMA OPATA
5 SIERRA MADRE
3
17
18 TAMAULIPAS
MEXICAN INTERIOR PLATEAU
CENTRAL SIERRA MADRE
14
15
16
JALISCO
12
11
10
CENTRAL MESA
13
VERA CRUZ
8
7
GUERRERO
6 OAXACA
TEHUANTEPEC
4
YUCATAN PENINSULA
5
LOWLAND MAYA
ATLANTIC NICARAGUA
1

Kroeber: Cultural and Natural Areas of Native North America.
Univ. Calif. Publ. Am. Arch. and Ethn., Vol. 38.

Map. 6. Native Cultural Areas of North America, designated as in text and in table 18.


PHYSIOGRAPHIC AREAS
AFTER
DOWLING, FENNEMAN AND THAYER.
SCALE
A
1 CANADIAN SHIELD
3 CLAY BELT
1 CANADIAN SHIELD
(A)
1 SUPERIOR UPLAND
2 LAURENTIAN HIGHLAND
B
3
4
5 BLUE RIDGE
6
C
1 APPALACHIAN HIGHLAND
NEW ENGLAND
7 ST. LAWRENCE VALLEY
8 APPALACHIAN PLATEAUS
9
10 ADIRONDACKS
11 INTERIOR LOW PLATEAUS
VALLEY AND RIDGE
PIEDMONT
COASTAL PLAIN
CONTINENTAL SHELF
D
(D)
ONTARIO
12 CENTRAL LOWLAND
13 GREAT PLAINS
2 MANITOBA LOWLANDS (First Prairie Steppe)
4 CRETACEOUS PLATEAU (Third) (Second) (Prairie Steppe)
5 NORTHERN GREAT PLAINS
3 MACKENZIE LOWLANDS
E
14 OZARK PLATEAUS
15 OUACHITA
F
2 MACKENZIE MTS.
1 ROCKY MOUNTAINS
2 COLUMBIA MTS.
SELKIRK MTS.
16 SOUTHERN
17 WYOMING BASIN
18 MIDDLE
19 NORTHERN
G
4 PLATEAUS
3 CARIBOO MTS.
20 COLUMBIA PLATEAUS
21 COLORADO PLATEAUS
22 BASIN AND RANGE
3 SONORAN DESERT
1 SIERRA MADRE
2 N.-C. DESERT PLATEAU
4 VOLCANIC AREA
5 SIERRA DEL SUR
6 COASTAL PLAIN
7 TEHUANTEPEC
8 CHIAPAS
H
1 COAST RANGE
2 INTERRUPTED RANGE
23 SIERRA-CASCADE
24 PACIFIC BORDER
25 LOWER CALIFORNIA

Map 7. Physiographic Areas of North America, after Dowling, Fenneman, and Thayer. (Published by the United States Geological Survey and in the Annals of the Association of American Geographers.)

## TABLE 18

### SUMMARY LIST OF NORTH AMERICAN CULTURE AREAS

(Areas, populations, densities slightly rounded)

| No. | Designation | Ethnic groups | Approximate Area, km.$^2$ | Estimated population | Density per 100 km.$^2$ | Agriculture | Cultural intensity | Environment |
|---|---|---|---|---|---|---|---|---|
| A | ARCTIC COAST | | | | | | | |
| 1a | Central-Eastern Eskimo | From Coronation Gulf to Labrador and Greenland | 1,335,000 | 30,000 | 2.4 | — | 2 | Coast Tundra |
| 1b | Barren Ground Eskimo | Caribou Eskimo | 170,000 | 700 | 0.4 | — | 1+ | Interior Tundra |
| 2a | Western Eskimo | From the Mackenzie Delta west | 640,000 | 31,500 | 4.9 | — | 2+ | Coast Tundra |
| 2b | Aleut | Aleut | 25,000 | 16,000 | 65.0 | — | 2 | Island Tundra |
| 2c | Pacific Coast Eskimo | Kaniagmiut, Chugachigmiut, Ugalakmiut (Alaska Peninsula to the Copper River) | 60,000 | 11,500 | 19.0 | — | 2+ | NW Moist Coniferous Forest |
| NW | NORTHWEST COAST | | | | | | | |
| 1a | Northern Maritime Mainland | Northern Tlingit | 25,000 | 2,500 | 10.0 | — | 4 | NW Moist Coniferous Forest |
| 1b | Northern Maritime Archipelago | Southern Tlingit, Haida, Tsimshian proper | 95,000 | 21,000 | 22.0 | — | 5 | NW Moist Coniferous Forest |
| 1c | Northern Maritime River | Niska, Gitskyan, Haisla | 45,000 | 5,000 | 11.0 | — | 4+ | NW Moist Coniferous Forest |
| 2a | Northern Central Maritime | Kwakiutl, Heiltsuk, Bella Coola | 45,000 | 7,500 | 17.0 | — | 4+ | NW Moist Coniferous Forest |
| 2b | Southern Central Maritime | Nutka, Makah, Quileute, Quinault | 15,000 | 10,000 | 67.0 | — | 4 | NW Moist Coniferous Forest |
| 3 | Gulf of Georgia | Salish of Vancouver Island and coast to Lummi, Nutsak; Klallam; Chimakum | 72,000 | 23,500 | 33.0 | — | 3+ | NW Moist Coniferous Forest |
| 4 | Puget Sound | Salish of Puget Sound region from Skagit south | 36,000 | 6,000 | 17.0 | — | 3− | NW Moist Coniferous Forest |
| 5 | Lower Columbia | Chinook; Chehalis, Tillamook; Yaquina, Alsea, Siuslaw | 50,000 | 32,500 | 65.0 | — | 3+ | NW Moist Coniferous Forest |
| 6 | Willamette Valley | Kalapuyan divisions | 33,000 | 3,000 | 11.0 | — | 2− | NW Moist Coniferous Forest (and Grassland) |
| 7 | Lower Klamath | Kus, SW Oregon Athabascans, Tolowa, Hupa, Chilula, Karok, Yurok, Wiyot | 38,000 | 19,000 | 50.0 | — | 3+ | NW Moist Coniferous Forest (Redwood, Pine, Fir) |
| SW | SOUTHWEST<br>I. *Pueblo Sphere* | | | | | | | |
| 1 | Pueblo | Tano, Keres, Zuñi, Hopi | 45,000 | 34,000 | 76.0 | Primary | 5+ | Sagebrush-Juniper Semidesert, Short and Desert Grass, W Pine |
| 2a | Inter-Pueblo | Navaho | 643,000 | 14,500 | 2.3 | Considerable | 3 | |
| 2b | Circum-Pueblo | Apache (except Lipan?) | | | | Local | 2 | |
| | II. *Sonora-Gila-Yuma Sphere* | | | | | | | |
| 3 | Fuerte-Yaqui Lowland (Cáhita) | Cáhita: Yaqui, Mayo, Tehueco, etc. | 48,000 | 80,000 | 25.0 | Important | 3+ | Sonoran Desert of Succulent Vegetation; Deciduous Thorn Woodland (Scrub) |
| 4 | Sonora | Pima (Bajo, Alto, Papago), Opata | 171,000 | | | Important | 3+ | Deciduous Thorn Woodland (Scrub) |
| 5 | Northern Sierra Madre | Tarahumar | 71,000 | | | Important | 3+ | W Pine; Thorn Scrub |
| 6 | Sonora Coast | Serian tribes: Seri, Tepoca, Guaymas, etc. | 31,000 | | | — | 1+ | True Desert of Succulent Vegetation |
| 7 | Northwest Arizona | Yavapai, Walapai, Havasupai | 67,000 | 1,500 | 2.4 | Sporadic | 1+ | Creosote-bush Desert (Basin-and-Range), Juniper Semidesert (Colorado Plateaus) |
| 8 | Lower Colorado River | Cocopa, Yuma, Mohave, Maricopa; Halyikwamai, Kohuana, Halchidhoma | 42,000 | 13,000 | 33.0 | Important | 3+ | Torrid Desert |
| 9 | Peninsular California | Diegueño, Kamia, Akwa'ala, Kiliwa, Cochimí, Waicura, Pericú | 139,000 | 20,000 | 14.0 | — | 1+ | Extreme Desert, Cactaceous; Pine in N mountains |
| 10 | Southern California | Chumash; Gabrielino, Serrano, Cahuilla, Luiseño, Juaneño, Cupeño | 68,000 | 26,500 | 39.0 | — | 3+ | Winter-rain Chaparral interspersed with Desert |
| I | INTERMEDIATE AND INTERMOUNTAIN | | | | | | | |
| 1a | Great Basin | Ute, S Paiute, Chemehuevi, E Mono, N Paiute, C and W Shoshone; Washo | 687,000 | 16,000 | 2.3 | — (Spor.) | 1 | Sagebrush-Juniper Semidesert |
| 1b | Snake-Salmon Drainage | Bannock, Lemhi | 290,000 | 3,000 | 1.0 | — | 1 | Same, plus W Pine in mountains |
| 1c | Klamath Lakes-Pit River | Klamath, Modoc; Achomawi, Atsugewi; probably Mountain Maidu | 50,000 | 5,000 | 10.0 | — | 2− | W Pine, Sagebrush-Juniper, Marsh |
| 1d | Wind River | Wind River Shoshone | 55,000 | 2,500 | 4.5 | — | 2− | Sagebrush (Wyoming Basin of Rocky Mountain System) |
| 2a | California | From Kato, Yuki, Wintun, Yana, south to Yokuts and Salinan | 145,000 | 54,500 | 38.0 | — | 3− | Winter-rain Vegetation: Marshland, Bunch Grass, Chaparral, to Pine |
| 2b | California Climax | Valley Nisenan and Maidu, Patwin, Pomo | 28,000 | 21,000 | 75.0 | — | 3+ | Same |
| 2c | California-Northwest Transition | Trinity Wintu, Shasta, Chimariko, Whilkut, Nongatl, Mattole, Sinkyone, Wailaki | 21,000 | 8,500 | 40.0 | — | 2+ | Same: mainly Pine, some Redwood Forest and Grass |
| (3) | Columbia-Fraser | | | | | | | |
| 3a | Middle Columbia | Sahaptin tribes; Wailatpu; Wenatchi, Sinkiuse, Spokane (etc.) Salish | 190,000 | 22,000 | 12.0 | — | 2 | Sagebrush, Grassland, W Pine |
| 3b | Upper Columbia | Most interior Salish, from Methow and Okanagan to Flathead; Kootenay | 307,000 | 8,500 | 2.8 | — | 2 | W Pine Forest |
| 3c | Fraser | Lillooet, Thompson, Shuswap; Athab. Nicola, Chilcotin | 170,000 | 17,000 | 10.0 | — | 2 | W Pine, Sagebrush, and Bunch Grass |
| E | EAST AND NORTH<br>*Eastern Areas* | | | | | | | |
| 1a | Southeast | Muskogians (all); Yuchi; Ofo, Biloxi; Chitimacha | 500,000 | 74,500 | 15.0 | Important | 4+ | SE Pine, some Broad-leaved and Swamp Forest |
| 1b | Southeast Swamps | Natchez, (Tunica?) | 28,000 | 5,500 | 20.0 | Important | 5− | Swamp Forest mainly |
| 1c | North Florida | Timucua | 68,000 | 8,000 | 12.0 | Important | 4 | SE Pine and Broad-leaved Forest |
| 2 | South Florida | Calusa, etc. | 54,000 | 4,000 | 7.4 | —(Spor. ?) | 2 | SE Pine, Savanna Grassland, Swamp, Broad-leaved and Tropical Rain Forest |
| 3 | Northwest Gulf Coast: South Texas (see M 18) | Atakapa, Karankawa, Tonkawa, Lipan (?) | 206,000 | 6,500 | 3.2 | — | 1 | Swamp, Tall Grass, Broad-leaved Woodland |
| 4a | Red River | Caddo, Hasinai, Wichita, etc., Quapaw (?) | 326,000 | 16,000 | 5.0 | Important | 4 | Broad-leaved Forest and Tall-grass Prairie |
| 4b | Middle Platte | Pawnee | 130,000 | 10,000 | 7.6 | Important | 4 | Tall-grass Prairie |
| 5a | Southern Plains | Kiowa, Comanche, Kiowa-Apache | 308,000 | 9,500 | 3.1 | — | 3 | Short-grass Plains; also Mesquite Savanna, E Broad-leaved Scrub Forest |
| 5b | Northern Plains | Blackfoot, Arapaho-Atsina, Cheyenne, Crow, Teton, Sarsi, (Assin.?) | 1,090,000 | 41,000 | 3.8 | — | 3+ | Short-grass Plains; Poplar Savanna in N, Pine at W edge |
| 6a | Southern Prairie | Kansa, Missouri, Oto, Omaha, Ponca, Iowa, Osage | 470,000 | 16,000 | 3.4 | Important | 4 | Savanna; also E Broad-leaved Forest and Tall-grass Prairie |
| 6b | Central Prairie | Santee, Yankton, and Yanktonai Dakota | 300,000 | 15,000 | 5.0 | Sporadic | 3+ | Tall Grass; also Savanna, E Broad-leaved Forest |
| 6c | Village Prairie | Mandan, Hidatsa; Arikara | 60,000 | 9,000 | 15.0 | Important | 4 | Short-grass Plains |
| 6d | Northern (Canadian) Prairie | Assiniboin, Plains Cree, Plains Ojibwa | 340,000 | 13,000 | 3.8 | — | 3 | Tall-grass Prairie and Poplar Savanna |
| 7 | Wisconsin (Wild Rice) | Menomini, Sauk, Fox, Kickapoo; Winnebago; some Ojibwa (?) | 146,000 | 18,500 | 13.0 | Important | 4− | E Broad-leaved and N Coniferous Forest, Prairie |
| 8a | Ohio Valley | W Shawnee, Miami, Potawatomi (?); later, other Algonkin tribes | 465,000 | 10,500 | 2.3 | Important | 3 | E Broad-leaved Forest |
| 8b | Illinois | Illinois | 307,000 | 9,500 | 3.1 | Important | 3 | E Broad-leaved Forest, Oak Savanna, and Tall-grass Prairie |
| 9 | Lower Great Lakes (N Iroquoian) | Iroquois, Huron, Tionontati, Neutral, Erie; Conestoga (?) | 440,000 | 42,500 | 9.7 | Important | 4 | E Broad-leaved Forest, some N Coniferous admixture in part |
| 10 | North Atlantic Slope | Micmac, Abnaki; (Pennacook with next ?) | 328,000 | 7,500 | 2.3 | Sporadic | 2 | N Coniferous Forest |
| 11 | Middle Atlantic Slope | S New England Algonkins, Wappinger, Mahican, Delaware; (Conoy ? Nanticoke ?) | 183,000 | 47,000 | 25.7 | Important | 3 | E Broad-leaved Forest |
| (12) | South Atlantic Slope | | | | | | | |
| 12a | Piedmont | Eastern Siouan tribes | 210,000 | 28,500 | 14.0 | Important | 3 | E Broad-leaved Forest |
| 12b | Lowland | Eastern Siouan tribes; Tuscarora | | | | Important | 3 | SE Pine Forest |
| 12c | Carolina Sound | Weapemeoc and other most southerly Algonkins | 14,000 | 4,500 | 32.0 | Important | 3 | Marshland, Swamp Forest |
| 12d | Virginia Tidewater | Powhatan group; (Conoy ? Nanticoke ?) | 23,000 | 9,000 | 39.0 | Important | 3+ | Mixed SE Pine and E Broad-leaved Forest |
| 13 | Appalachian Summit (Cherokee) | Cherokee | 135,000 | 22,000 | 16.0 | Important | 4− | E Broad-leaved Forest, N Coniferous admixture at elevations |
| | *Northern Areas* | | | | | | | |
| 14 | Northern Great Lakes | Ojibwa, Ottawa, Algonkin; Montagnais (?) | 520,000 | 37,000 | 7.1 | Sporadic | 2 | Mixed N Coniferous and E Broad-leaved Forest |
| 15 | Eastern (Algonkin) Subarctic | Cree, Naskapi, Tête de Boule; Montagnais (?); Beothuk | 2,570,000 | 23,000 | 0.9 | — | 1+ | N Transcontinental Coniferous Forest |
| 16a | Western (Athabascan) Subarctic | All N Athabascans except Sarsi and those in 16b-d and 13c | 2,670,000 | 20,500 | 0.8 | | 1+ | N Transcontinental Coniferous Forest, and Above-timber "Tundra" |
| 16b | Interior Tundra | Hare, Yellowknife, Caribou-eater, Chipewyan | 900,000 | 2,500 | 0.3 | | 1 | Interior Tundra |
| 16c | Upper Fraser | Carrier, Babine | 112,000 | 8,500 | 7.6 | | 2 | W Coniferous Forest |
| 16d | Northern Plateau Apex | Tahltan, Taku-tine | 215,000 | 2,500 | 1.2 | | 1+ | W Coniferous Forest, and Above-timber "Tundra" |
| M | MEXICO AND CENTRAL AMERICA | | | | | | | |
| | Isthmus (with South America) | | | | | Important | | |
| 1 | Atlantic Nicaragua-Honduras | Ulua, Mosquito, Sumo, Paya, Xicaque, Lenca | 205,000 | 100,000 | 40.0 | Important | 2 | Tropical Rain Forest |
| 2 | Pacific Nicaragua | Orotina, Nicarao, Diri, Subtiaba, Chorotega | 43,000 | | | Primary | 4 | Tropical Jungle to Scrub |
| 3 | Salvador | Pipil; Lenca (part) | 31,000 | | | Primary | 4 | Tropical Jungle to Scrub and Savanna |
| 4 | Upland Guatemala (Highland Mayan) | Tzental-Tzotzil; Qu'iché, Cakchiquel, etc.; Kekchi; Pokonchí; etc.; Pipil | 79,000 | 3,000,000 | 300.0 | Primary | 6 | Pine, Deciduous Forest, Savanna; and toward coast |
| 5 | Yucatán Peninsula (Lowland Mayan) | Maya; Chontal, Chol, Chortí; Lacandón | 255,000 | | | Primary | 7 | Tropical Rain Forest, Jungle to N |
| 6 | Oaxaca-Tehuantepec | Zapotec., etc.; Mixe; Zoque; Huave, etc. | 102,000 | | | Primary | 8 | Tropical Rain Forest, Deciduous Forest, Thorn Scrub |
| 7 | Guerrero | Nahua groups; Yopi; Mixtec (?) | 137,000 | | | Primary | 6− | Tropical Jungle, Oak-Pine Forest, Scrub |
| 8 | Vera Cruz | Nahua groups; Totonac; Huastec | 103,000 | | | Primary | 6 | Tropical Rain Forest through Oak to Pine Forest |
| 9 | Southeastern Central Mesa | Aztec, Tlaxcala, Cholula, etc. | 40,000 | | | Primary | 7 | Scrub, Grassland |
| 10 | Michoacán | Tarasco | 57,000 | | | Primary | 6 | Pine, Oak, Scrub, Grassland |
| 11 | Jalisco Highland | Jalisco, etc., Nahua (?) | 33,000 | | | Primary | 5 | Pine, Oak, Scrub, Grassland |
| 12 | Jalisco Coast | Colima, etc., Nahua (?) | 35,000 | | | Primary | 5 | Deciduous Thorn and Broad-leaved Forest |
| 13 | Northeastern Central Mesa: Guanajuato-Querétaro | Otomí | 67,000 | | | Primary | 4 | Scrub, Grassland |
| 14 | South Sinaloa: Aztatlán-Culiacán | Centispac, Chiametla, Culiacán (Nahua or Sonoran ?) | 40,000 | | | Primary | 4 | Deciduous Thorn Forest |
| 15 | Sierra del Nayarit (S Sierra Madre) | Huichol, Cora, Tepecano (?); Teul-Cazcan (?) | 46,000 | | | Primary | 3 | W Pine and Deciduous Thorn Forest |
| 16 | Central Sierra Madre | Acaxee, Tepehuán | 110,000 | | | Important | 2 | W Pine and Deciduous Thorn Forest |
| 17 | North Mexican Interior Plateau | Zacatec, Guachichil, Lagunero, Concho, Pame, Janambre | 352,000 | 100,000 | 15.0 | Sporadic | 2 | Desert, Semidesert, Scrub, some Grassland |
| 18 | Northwest Gulf Coast: Tamaulipas (see E 3) | Tamaulipec, Olive, Coahuiltec | 205,000 | | | Sporadic | 1+ | Semidesert Scrub and Mesquite Savanna |

DATE DUE

~~MAY 25 [illegible]~~

~~JUN 15 1989~~

~~JUN 15 1989~~

GAYLORD PRINTED IN U.S.A.

E98 .C9K93
Cultural and natural areas of native
Princeton Theological Seminary–Speer Library
1 1012 00032 1150